

INDUCTORY FLIGHT TRAINING PROGRAM

Environmental Assessment

US Air Force Academy

December 2000

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Executive Summary

Introduction

The United State Air Force Academy (Academy) has proposed establishing an Introductory Flight Training (IFT) program at the Academy's airfield using a single private flight school to operate the program and provide the aircraft. This Proposed Action was evaluated following National Environmental Policy Act (NEPA), Air Force Instruction (AFI) 32-7061 and other applicable statutes and guidance. This Environmental Assessment (EA) meets these requirements by examining several alternate ways to conduct the introductory flight training, and recommending one of the alternatives.

The Academy has provided introductory flight training to its pilot candidates for over three decades. The training prepares the candidates for the Air Force's Specialized Undergraduate Pilot Training (SUPT). Historically, the pilot candidates from the Academy constitute approximately 50 percent of the students attending Specialized Undergraduate Pilot Training. In 1997, the Air Force suspended its entire Introductory Flight Training program for about a year. Graduation rates at the Specialized Undergraduate Pilot Training program dropped, increasing program costs. The Air Force then re-instituted introductory flight training in October 1998. The Academy consequently started a temporary flight training arrangement wherein most flight students were sent off-site to several local flight training schools for their introductory flight training. This current arrangement does not meet the Academy's mission or objectives. The Academy, therefore, has proposed a new program to train and prepare America's best young pilots for advanced pilot training.

Following the review of this EA by the public, the Superintendent of the Academy must decide whether to accept or reject the Proposed Action. If the Superintendent accepts the Proposed Action he will sign a Finding of No Significant Impact (FONSI). Alternatively, if the impacts are determined to be significant, an environmental impact statement (EIS) may be pursued.

Proposed Action

The Academy proposes to consolidate its Introductory Flight Training program at its own airfield. It will use all of its existing training areas, and most of its existing departure and arrival routes, while reestablishing one route and altering one route. In addition, the Academy wants to hire one contractor to conduct the Introductory Flight Training program. To comply with Air Force requirements, the proposed program would offer 50 hours of flight instruction with the goal of awarding each student a private pilot's license. A staff of approximately nine Air Force personnel, to include Air Force pilots, would oversee the operation. The program would train approximately 180 cadets during the school year, with the remaining 370 cadets receiving their training in the year following their graduation. To meet these objectives, the program would increase flight activity to a level 10 percent higher

than the previous consolidated program conducted from 1994 to 1997 (see Table 2-4 on page 2-17).

Purpose and Need

The purpose of the Introductory Flight Training program is to prepare the Academy's pilot candidates for Specialized Undergraduate Pilot Training.

The Air Force and the Academy need the proposed Introductory Flight Training program because it:

- Permits the Academy to fulfill its charter to prepare cadets to be professional airmen by allowing Academy staff to directly oversee the training, and creating a military-like atmosphere similar to that in Specialized Undergraduate Pilot Training
- Allows pilot candidates the opportunity to earn a pilot's license, which is a prerequisite for Specialized Undergraduate Pilot Training
- Minimizes the number of Air Force pilots required for flight training, leaving them available for military operations
- Reduces attrition rates at Specialized Undergraduate Pilot Training
- Allows pilot candidates to experience military flying, evaluate it as a potential Air Force career, and determine if it's the appropriate career for them
- Maintains the prestige and tradition of flight training at the Academy
- Ensures the Academy remains attractive to high caliber applicants

Minimum Mission and Project Objectives

Based on the needs of the program, the Academy developed the following objectives to evaluate the Proposed Action and alternatives:

- Program must meet the training and manning requirements of the Air Force, to include the opportunity for students to earn a private pilot's license
- Program must fit into the schedules of cadets and recent graduates
- Academy staff must be able to provide direct program oversight and quality control
- Program must allow for consistency of training
- Program must allow for training in a military environment similar to Specialized Undergraduate Pilot Training to increase the likelihood of success at Specialized Undergraduate Pilot Training
- Program must allow for maximum trainee interaction with, and mentoring by, active-duty pilots
- Program must maximize safety of flight operations

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- Program must fit within the Air Force's budget
 - Program must be designed to complete cadet training within 57 training days and recent graduates within 42 training days

Alternatives

The Academy considered several alternative programs and operational procedures, including the No-Action alternative. Most were dismissed because they did not meet the mission objectives. The dismissed alternatives are listed below.

Alternative	Reason Dismissed
Expansion of Aero Club	Aero Club did not wish to conduct proposed Introductory Flight Training
Academy purchase of new aircraft	Air Force did not support high initial outlay
Contractor purchase of aircraft for use by Academy instructors	Not enough Air Force pilots available
Train cadets at facilities outside of the Academy	Cannot fit cadet's academic schedule
Train recent graduates at facilities outside of the Academy	Removes Academy's pilot candidates from Academy oversight
Routinely vary east bound departure route to spread the "share the noise" burden rather than subjecting one set of houses to repeated noise	Unsafe, as it eliminates the predictability of a regular route. Flying is safer when the pilots and traffic controllers can predict a planes location
Eliminate early morning flights to lessen noise impact	Not feasible as the Academy needs to fly sunrise to sunset to meet its training demands

Although most of alternatives analyzed were dismissed because they did not meet the mission and objectives of the Air Force and the Academy, several ideas addressing operational procedures were retained and are incorporated into the Preferred Alternative as described below.

Preferred Alternative

The Preferred Alternative is the Proposed Action of implementing the Introductory Flight Training program at the Academy airfield using a contracted pilot training school. Additionally, the program would use some existing routes, alter its East departure route, and reestablish the Southeast departure. To minimize noise from Introductory Flight Training aircraft the Academy also would fly at a higher altitude on the altered East departure when cleared by the Colorado Springs Airport, and limit early morning east bound departures by:

- Scheduling north and south bound aircraft for early morning takeoffs
- Directing its instructors to use the North, South, and Southeast departures if weather and training requirements permit

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- Schedule early takeoffs for aircraft planning to stay in traffic patterns at the Academy airfield

Impacts

There are no significant changes or impacts to the natural environment as a result of this Proposed Action. The Academy has been in existence for over 30 years flying over 200,000 various types of flight operations every year. For many years the Academy has had an Introductory Flight Training program. Although the program has not been run from the Academy for the last 3 years, the pilot candidates are being trained in the local region (primarily in the Colorado Springs area). Therefore, approximately the same numbers of aircraft are currently being flown in the local area as would be flown under the Proposed Action. The difference is that the Proposed Action would bring the aircraft departures and arrivals back to the Academy.

The training areas for the Introductory Flight Training program are primarily to the east of Colorado Springs. To reach these training areas, the aircraft departure routes must head east, and consequently pass over residential areas. These routes are the areas considered by the public to have the greatest impact from the Proposed Action.

The human impacts most frequently cited by the public are disturbance from the aircraft in terms of noise and safety. Two noise studies were conducted to assess noise impacts. First, the Academy extrapolated impacts from a 1999 computer model (NOISEMAP) analysis. The NOISEMAP model is the standard method the Air Force uses to assess noise impacts from an airfield. Second, a supplemental study was conducted using actual sound measurements to analyze the level of noise from the aircraft along the departure and arrival routes. Repeated measurements, made at nine locations in sensitive residential areas, were analyzed to assess the impact (Table 4.5-3 on page 4-10 and Table 4.5-4 on page 4-11). Both noise studies showed that the level of noise from the Proposed Action is well within federal noise standards. Therefore, the Academy has concluded there are no significant noise impacts as a result of the Proposed Action. In terms of safety, the Air Force and the Academy go to great lengths to ensure the safety of all aircraft. By following operational procedures and standardizing training for all pilot candidates, the Academy feels strongly that the Introductory Flight Training program is safe for the community as well as the flight students.

1.0 Purpose and Need for the Proposed Action

1.1 Introduction to History of Flight Training

The United States Air Force Academy (Academy) was established in 1954 and moved to its current location outside of Colorado Springs in 1958. The Academy is a one-base major command with all of the facilities and organizational structures common to traditional Air Force bases. Superimposed upon the typical base structure are all of the organizational and functional requirements of a fully accredited 4-year college. Enrollment at the Academy is approximately 4,100 cadets. The mission of the Academy is to:

Inspire and develop outstanding young men and women to become Air Force officers with knowledge, character, and discipline, motivated to lead the world's greatest aerospace force in service to the nation.

In addition to the academic curriculum, cadets may also pursue introductory flight training. Approximately one-half of each incoming class ultimately receives Introductory Flight Training (IFT). Introductory flight training prepares students for the Air Force's Specialized Undergraduate Pilot Training (SUPT) program.

The Academy has provided introductory flight training for over three decades and has the sole consolidated Introductory Flight Training program operated by the Air Force. The entire Air Force trains 1,100 new pilots every year; approximately 50 percent, or 550, of these pilots receive their introductory flight training at the Academy. Thus, the Academy plays a vital role in the nation's defense by preparing young men and women for undergraduate pilot training.

During the past 30 years, the Academy has used its own pilots to conduct introductory flight training and has used various Air Force aircraft. The Academy used the T-41 aircraft from 1967 to 1994 and the T-3A from 1994 to 1997. In 1997, introductory flight training at the Academy and throughout the Air Force was suspended. Pilot candidates did not receive introductory flight training between 1997 and November 1998 and, as a result, did not do as well in the Specialized Undergraduate Pilot Training program. The graduation rate from the Specialized Undergraduate Pilot Training program decreased during this period.

In October 1998, the Air Force re-instituted introductory flight training throughout the Air Force in order to combat attrition rates in the Specialized Undergraduate Pilot Training program. The new introductory flight training programs resumed training pilot candidates using Federal Aviation Administration (FAA)-approved flight training schools. The new programs required students to complete 40 flying hours and a solo flight. In November 1999, the Air Force changed the requirements to 50 flying hours and attainment of a private pilot's license. A private pilot's license also was made a prerequisite for Specialized Undergraduate Pilot Training.

In response to the Air Force's initiatives, the Academy organized an Introductory Flight Training program to oversee training of all of its pilot candidates. Similarly, Air Force

Officer Accession and Training Schools at Maxwell AFB, Alabama also established an introductory flight training program to train all other Air Force pilot candidates, such as Reserve Officer Training Corps (ROTC) and Officer Training School (OTS) graduates. The pilot candidates from ROTC and OTS must also complete a 50-hour introductory flight training program and earn a private pilot's license prior to attending Specialized Undergraduate Pilot Training. Note there is no centralized training location for these students. As a result, all of them train at private flight training schools near their duty location.

The Academy's current Introductory Flight Training program trains its pilot candidates using the Academy's Flight Training Center ("Aero Club") and local flight training schools. The Academy trains some of its cadets during their academic careers at the Academy, and others soon after they graduate. It does not train all of its cadets as students because the 50-hour program will not fit all of their academic schedules. All cadets and some recent graduates are trained on-base at the Aero Club, and the remaining graduates are trained off-base. This arrangement is necessary for two reasons: (1) the Aero Club does not have the capacity to teach all of the Academy's pilot candidates each year; and (2) the cadet's academic schedule does not allow for travel time to off-base schools.

The Academy's training arrangements, as described above, were established to provide immediate and continuous training on an interim basis until the Academy could establish a new Introductory Flight Training program. The proposed program is designed to replace the previous consolidated Introductory Flight Training program (1994-1997) and is described in further detail in this document.

1.2 Proposed Action

This Environmental Assessment (EA) evaluates the potential environmental and socioeconomic impacts associated with the Proposed Action to implement changes in the Introductory Flight Training program at the Academy. The Proposed Action addressed in this EA consists of the following elements:

- Consolidating the flight and in-class training of pilot candidates (includes both cadets and recent graduates) at a single location—the Academy airfield. This will increase the number of flights to and from the Academy by approximately 10 percent when compared to the 1994-1997 program
- Contracting of a private flight school to conduct the entire Introductory Flight Training program with Air Force personnel overseeing the training
- Providing 50 hours of in-flight instruction with the goal of awarding each student a private pilot's license
- Continuing the use of auxiliary airfields and air space training areas for training exercises
- Continuing the use of historic air routes to and from training areas and the Academy airfields, reestablishing one previously used route, and altering one existing route

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- Continuing the use of the current flying schedule to include sunrise-to-sunset operations at the Academy and auxiliary airfields with night flying operations to continue at Peterson AFB and other local fields
 - Converting one of the Airmen's dorms to a Bachelor Officer Quarters (BOQ) to accommodate the additional housing needs for recent graduates attending the Introductory Flight Training program

In short, the Academy proposes to consolidate its Introductory Flight Training program at its own airfield. It will use all of its existing training areas, and most of its existing departure and arrival routes, while reestablishing one route and altering one route. In addition, the Academy wants to hire one private pilot's school to conduct the Introductory Flight Training program. To comply with Air Force requirements, the proposed program would offer 50 hours of flight instruction with the goal of awarding each student a private pilot's license. A staff of approximately nine Air Force personnel, to include Air Force pilots, would oversee the operation. The program would train approximately 180 cadets during the school year, with the remaining 370 cadets receiving their training in the year following their graduation.

This EA has been prepared by the Academy to meet the requirements of the National Environmental Policy Act (NEPA) and Air Force Instruction (AFI) 32-7061, and other applicable statutes and guidance discussed in Section 1.8.1 of this document and listed in Appendix A.

1.3 Location of the Proposed Action

The Proposed Action would be implemented at the Academy's existing airfield outside of Colorado Springs, Colorado (Figures 1-1 and 1-2). This airfield presently consists of runways and associated ancillary features. There are three primary runways, a glider strip, a glider landing zone, parachute training facilities and landing zone, and numerous buildings and hangars. The main airfield area is defined by the Academy boundary on the north and east; by the Academy southern boundary to the south; by the Service and Supply Area to the southwest; by Pine Valley Housing to the west; and by the Community Center to the northwest.

In addition to the Academy airfield, the Introductory Flight Training program would include the continued use of the airspace and existing facilities at Bullseye Auxiliary Airfield (Ellicott, Colorado), Butts Army Airfield, (Fort Carson, Colorado), and Colorado Springs Municipal Airport (shown on Figure 1-1). While the Introductory Flight Training program would be operated from the Academy, it would also use 21 geographically separate training areas in and around Colorado Springs for various training purposes. These training areas are to the east of Colorado Springs (shown in Figure 1-3). All of these facilities and training areas are currently used by the flight training operations at the Academy. In general, the Introductory Flight Training aircraft may fly up to 65 miles away from the Academy airfield to complete navigation training.

Figure 1-1

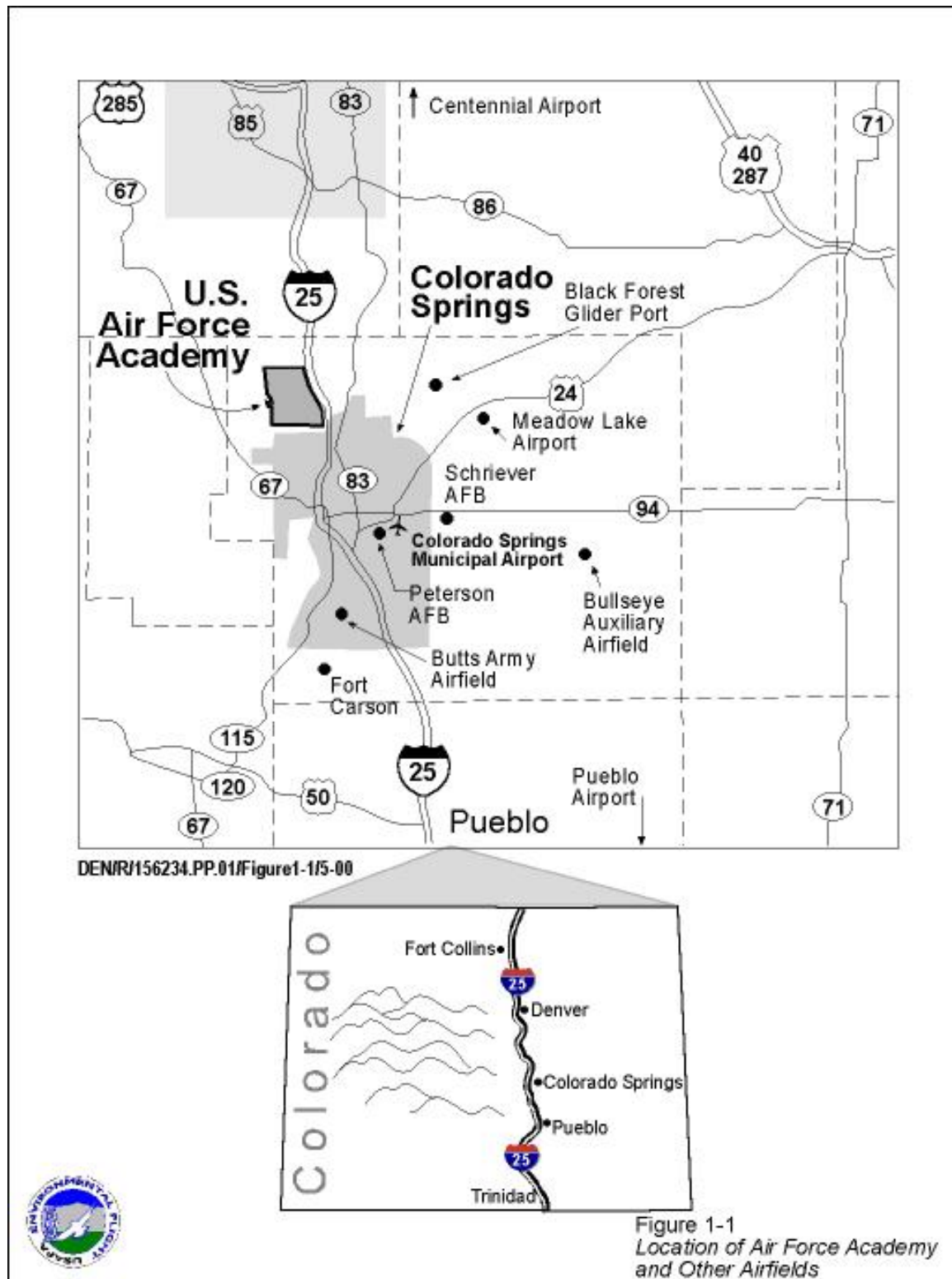


Figure 1-2

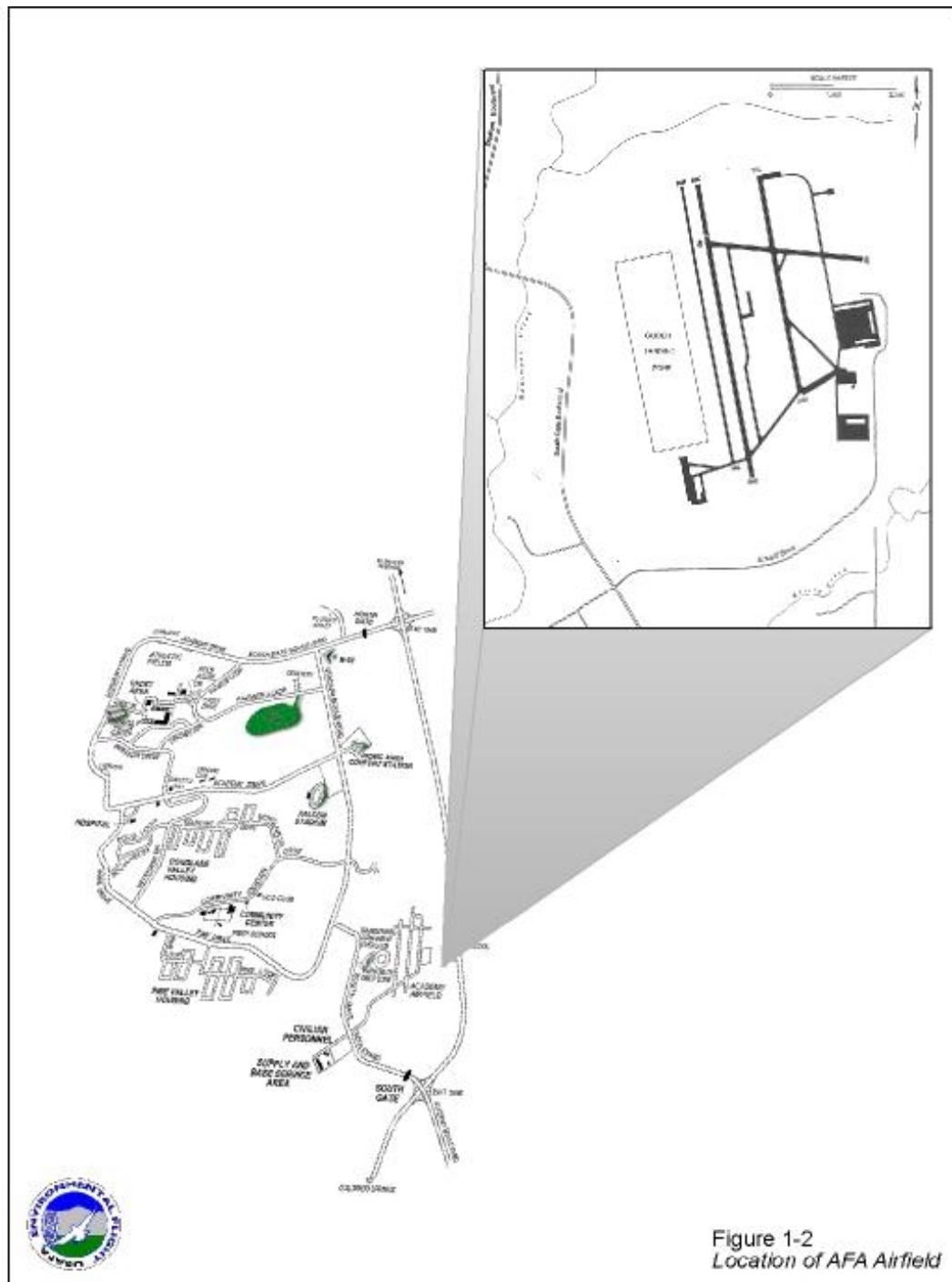


Figure 1-2
Location of AFA Airfield

Figure 1-3

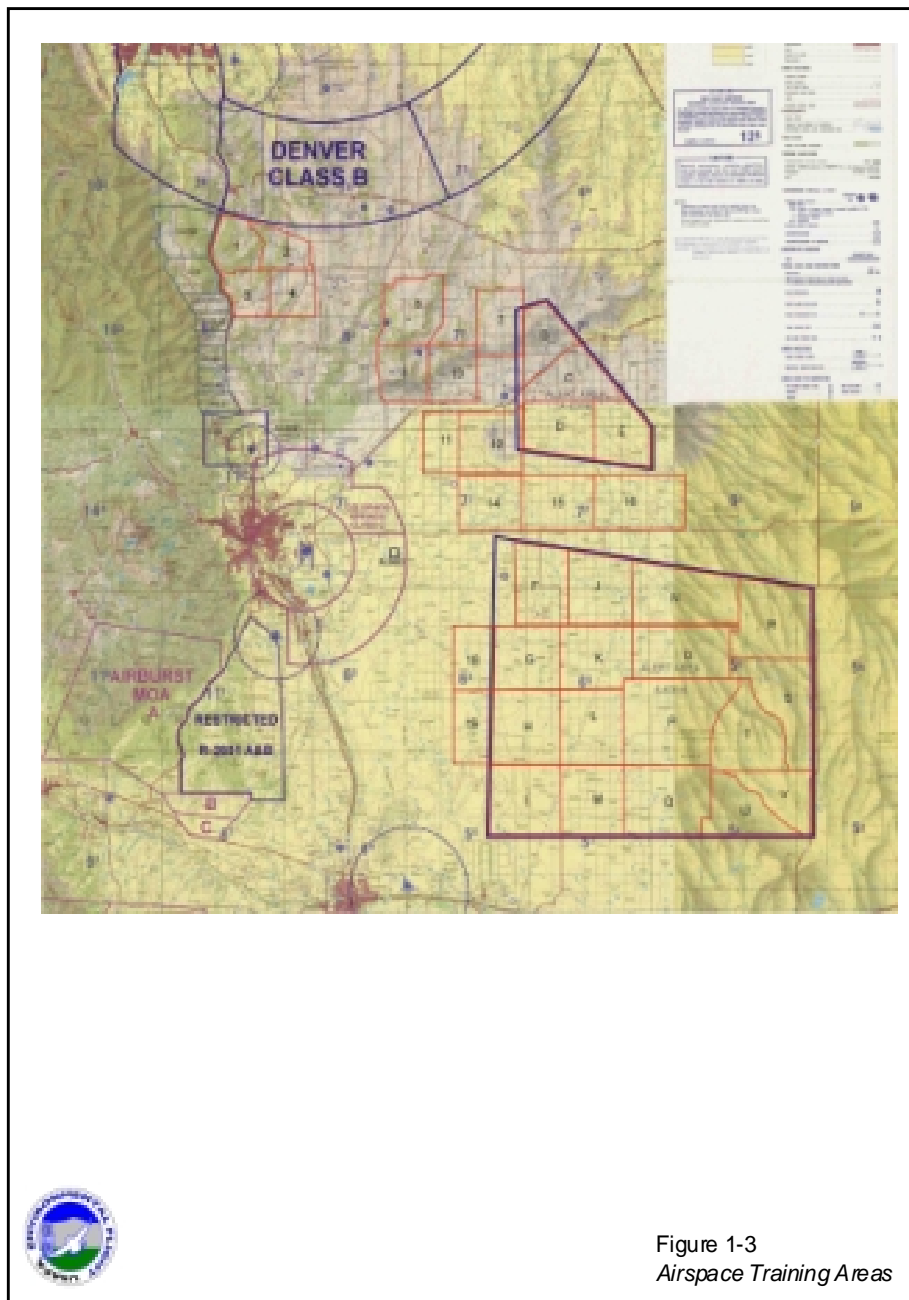


Figure 1-3
Airspace Training Areas

1.4 Purpose and Need of the Proposed Action

1.4.1 Purpose

The immediate purpose of the Proposed Action is to provide an Introductory Flight Training program at the Academy that offers the pilot candidates the opportunity to obtain a private pilot's license during their school years, or immediately following graduation from the Academy. Students who successfully complete introductory flight training are qualified to attend the Air Force's Specialized Undergraduate Pilot Training program.

Ultimately, it is anticipated that cadets who successfully complete introductory flight training will be well prepared for Specialized Undergraduate Pilot Training and that the attrition rate for Specialized Undergraduate Pilot Training pilot candidates will decrease. Previous introductory flight training programs reduced attrition rates of 20-27 percent to less than 8 percent.

A candidate who drops out of Specialized Undergraduate Pilot Training can cost the government from \$0.5 to \$1.5 million, depending on how much of the course the candidate completes before dropping out. In addition, losing students lowers the total number of pilots available for service. Because Academy graduates account for about half of the Air Force's 1,100 Specialized Undergraduate Pilot Training students annually, any reduction in the attrition rates of Academy graduates translates into significant cost savings as well as an increased number of well-trained pilots available for service in the Air Force.

1.4.2 Need

The need for the Proposed Action can be addressed by answering two questions: (1) why does the Academy need an Introductory Flight Training program at its airfield?; and (2) why does the Air Force need a contracted Introductory Flight Training program? The reasons are listed below:

- As the Air Force's premier educational institution, the Academy needs to meet its own core value of commitment to excellence. By establishing and supervising its own Introductory Flight Training program, the Academy is in a position to ensure the best training. First, because the Academy will have direct oversight of a consolidated and local Introductory Flight Training program, it can better control quality and provide a program that pushes its cadets to be the best-prepared students entering Specialized Undergraduate Pilot Training. Second, by consolidating the Introductory Flight Training program (versus having the training conducted by several private schools), the Academy can better ensure consistency of training across the curriculum. Third, by having the Introductory Flight Training program on-base with military oversight, the Academy can ensure the cadets gain exposure to the "military way of training." Military oversight increases the opportunity for mentoring, and cadets who are taken under the wings of experienced Air Force pilots will gain advanced knowledge of military flying.
- A contracted Introductory Flight Training program will limit the number of Air Force pilots required for training programs. The Air Force has a shortage of pilots and needs to keep pilots in military operational positions. The proposed Introductory Flight Training

program will use a contracted flight school in order to minimize the number of Air Force pilots required to act as instructor pilots.

- An Introductory Flight Training program will minimize the Specialized Undergraduate Pilot Training attrition rates. Analysis indicates students who have attended an Introductory Flight Training program are less likely to drop out than those who have not. The Proposed Action ensures that pilot candidates from the Academy, who constitute about 50 percent of all Specialized Undergraduate Pilot Training students, will have introductory flight training prior to Specialized Undergraduate Pilot Training.
- The Proposed Action will offer the opportunity for cadets to earn their private pilot's license, which is a prerequisite for Specialized Undergraduate Pilot Training.
- An Introductory Flight Training program at the Academy will expose cadets to the world of military flying earlier in their educational careers. If cadets determine they are not interested in or capable of pursuing flying, they then have time to adjust their personal goals, and enter the Air Force prepared for a non-flying career.
- As the sole military academy for Air Force officers, the Academy will meet the expectations of students considering attending the Academy. The students expect the Academy to have a powered aircraft program. Many want to be pilots and they attend the Academy for the opportunity to become pilots. In addition, the candidates expect Academy graduates will have "a leg up" over non-Academy graduates. For example, over many years, Academy graduates have consistently had the lowest attrition rates at Specialized Undergraduate Pilot Training. The Proposed Action would ensure the Academy remains attractive to outstanding students and would maintain the stellar performance of its graduates in Specialized Undergraduate Pilot Training.
- An Introductory Flight Training program will maintain the Academy's prestige and tradition. The nation expects the world's best Air Force academy to produce top pilots for the nation's defense. The Academy must be able to offer powered flight training to its pilot candidates.

1.5 Related Environmental Impact Statements/Environmental Assessments that Influence the Scope of this EA

There are no current environmental impact statements (EISs) or EAs that are either relevant to or exert influence on the scope of this EA. This EA is a stand-alone document for a Proposed Action that has independent utility and is not dependent on other actions. The EA is not tiered from existing EISs.

A 1994 EA was conducted for the conversion of existing aircraft to the T-3A aircraft. That EA resulted in a Finding of No Significant Impact (FONSI). Many of the issues in that EA are similar to the issues in this EA for the Introductory Flight Training program.

1.6 Decision that Must be Made

The Academy Superintendent must decide whether to accept or reject the Proposed Action and the elements of the Introductory Flight Training program. Proceeding with any element of the Proposed Action is linked to the successful processing of this EA and the subsequent determination of a Finding of No Significant Impact (FONSI), which must be issued by the Air Force. The Air Force is the lead agency in the preparation of this EA and no cooperating agencies have been identified in the preparation of this document. In the event that a satisfactory determination is made for this EA, the Academy superintendent is authorized to sign the FONSI. Alternatively, if the impacts are determined to be significant, an environmental impact statement may be pursued.

1.7 Scope of the Environmental Analysis

This EA assesses environmental consequences and possible impacts resulting from the proposed Introductory Flight Training program. (See Section 4.) The issues of primary concern in this EA are impacts on mission objectives and impacts to the surrounding residential areas.

1.8 Applicable Regulatory Requirements and Required Coordination

1.8.1 Applicable Federal and State Laws

There are numerous federal, state, and agency laws and regulations that must be complied with for military and civilian airport actions prior to implementing a significant federal action. All of these requirements have been considered in the planning for the Proposed Action.

Appendix A contains a listing of the applicable regulations and requirements that pertain to implementation of this Proposed Action.

1.8.2 Consultation Requirements

Correspondence was sent to the following agencies regarding the potential effects of the Proposed Action on the environment: U.S. Fish & Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Federal Aviation Administration (FAA), U.S. Environmental Protection Agency (EPA), Colorado Division of Wildlife (CDOW), Colorado Department of Public Health and Environment (CDPHE), El Paso County, City of Colorado Springs, Pikes Peak Area Council of Governments, the Nature Conservancy, and the Black Forest Land Use Committee. An agency meeting was held at the Academy on July 18, 2000 at 9:00 a.m. All of the above agencies were invited to attend the meeting. Copies of correspondence sent to these agencies and any responses received are contained in Appendix B.

1.8.3 Public Involvement

This EA will be made available to the public by the Academy for a 45-day review period starting on the date of issuance of the EA. The Academy and the Air Force will review and respond to comments on the EA and consider them in the decision-making process concerning the Proposed Action and alternatives.

Public meetings were held early in the process to solicit comments from the public on the Introductory Flight Training program. Public open houses were held on May 17, 2000 from 4:00 to 7:00 p.m. and on July 25, 2000 from 6:00 to 8:00 p.m., both at the Academy. Both meetings were advertised in the *Colorado Springs Gazette* and the second meeting was also advertised in the local *Black Forest News*.

Additionally, a toll free telephone number was set up where individuals may leave information in order to be included on the Introductory Flight Training EA mailing list, request information, or leave a message.

A letter was sent to individuals on the mailing list in October updating them on the progress of the EA. Comments on the Introductory Flight Training program have been solicited from the public since the May 2000 public meeting. All comments received and responses to those comments are contained in Appendix C.

1.9 Organization of This EA

This EA discusses the applicable regulatory requirements and existing conditions that serve as the context to evaluate the potential environmental and socioeconomic impacts associated with the Proposed Action and alternatives.

Section 1 of this EA defines the purpose and need for the Proposed Action.

Section 2 describes alternatives including the Proposed Action, the No-Action alternative, and other alternatives.

Section 3 provides general information on existing conditions and describes the environmental and socioeconomic resources that may potentially be affected by the Proposed Action.

Section 4 discusses the environmental and socioeconomic consequences (impacts) associated with the Proposed Action and the No-Action alternative.

2.0 Description of the Proposed Action and Alternatives

2.1 Introduction

This section provides a detailed description of the Proposed Action and the alternatives that were evaluated during the preparation of this Environmental Assessment (EA), including the No-Action alternative. The No-Action alternative would not meet the stated needs or mission objectives of the Academy, but must be analyzed in accordance with applicable National Environmental Policy Act (NEPA) regulations [40 CFR 1502.14(d)].

2.2 Process Used to Formulate Alternatives

NEPA and Air Force Instruction (AFI) 32-7061 require consideration of reasonable alternatives to the Proposed Action. Only alternatives that would reasonably meet the defined need for the Proposed Action require detailed analysis in this EA. A number of alternatives were initially identified to provide the Introductory Flight Training (IFT) program at the Academy for pilot candidates. These alternatives were screened against the mission/project objectives, environmental standards, and input received from the public.

2.3 Alternative Selection Criteria

Criteria were developed for use in screening alternatives to be considered in this EA. The following two measurements were used as the principal guidance in determining alternatives to be evaluated further in this document.

2.3.1 Minimum Mission/Project Objectives

The minimum project objectives that must be met by the Proposed Action are:

- Program must meet the training and manning requirements of the Air Force, to include the opportunity for students to earn a private pilot's license
- Program must fit into the schedules of cadets and recent graduates
- Academy staff must be able to provide direct program oversight and quality control
- Program must allow for consistency of training
- Program must allow for training in a military environment similar to Specialized Undergraduate Pilot Training (SUPT)
- Program must allow for maximum trainee interaction with and mentoring by active-duty pilots

-
- Program must maximize safety of flight operations
 - Program must fit within the Air Force's budget
 - Program must be designed to complete cadet training within 57 training days and recent graduates within 42 training days

2.3.2 Minimum Environmental Standards

The alternatives evaluated in this EA were initially screened to determine if they appeared to be in compliance with applicable laws and regulations. This screening process sought to identify potential environmental “fatal flaws” that might prevent an alternative from being implemented. None of the proposed alternatives was found to be out of compliance with applicable laws and regulations during the initial screening process.

2.4 Background on Airspace and Flight Routes

Academy aircraft flying Introductory Flight Training missions operate under visual flight rules (VFR). The training areas east of Colorado Springs (Figure 1-3) and most of the transit routes to and from the Academy are defined as category E airspace (Figures 2-1 and 2-2). Aircraft flying under visual flight rules in category E airspace are not restricted to defined corridors, but are permitted anywhere in the defined airspace while complying with FAA altitude requirements. Nonetheless, Academy aircraft use specific flight routes in the transit areas to facilitate instruction and maximize safety. These routes are defined in a letter of agreement with Colorado Springs Approach Control.

The Academy has historically used five departure routes when leaving the Academy and flying to the training areas: the East departure, the Woodmen departure, the Southeast departure, and the North and South departures. The Academy considers the routes to be approximately ½ mile in width. Pilots use visual landmarks to stay on course. Within each route the exact flight path can, and does, vary with each pilot. The variation in flight paths is due to several factors:

- aircraft performance
- training requirements
- weather
- safety requirements
- experience level of student pilots

Based on concerns raised by the public during the summer of 2000 (primarily residents of the Black Forest), the Academy has been evaluating the East departure route and researching alternative routes and procedures that may mitigate the public's concerns regarding noise and safety. The Black Forest is unique compared to other areas of Colorado Springs because of its higher elevations, and it has thus become a major focus of attention during the initial phases of the EA. The East departure has been used since the 1970s, although variations in ground tracks have occurred. This route generally heads east from Northgate Road towards Peyton. Currently the Academy keeps its aircraft on a path in line with Swan Road as they head east, but in the past the aircraft have flown on parallel paths up to 1.5 miles north of Swan Road.

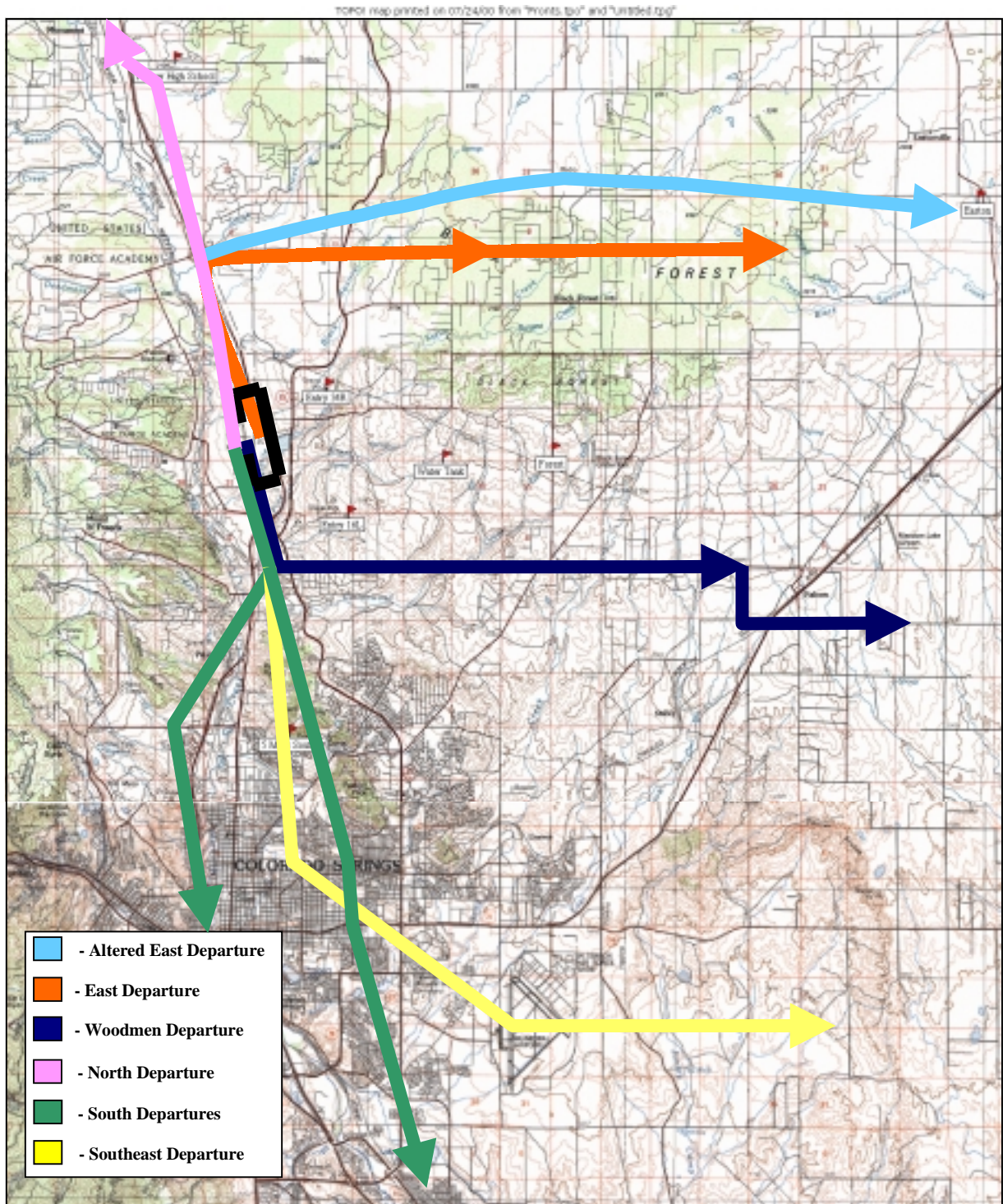
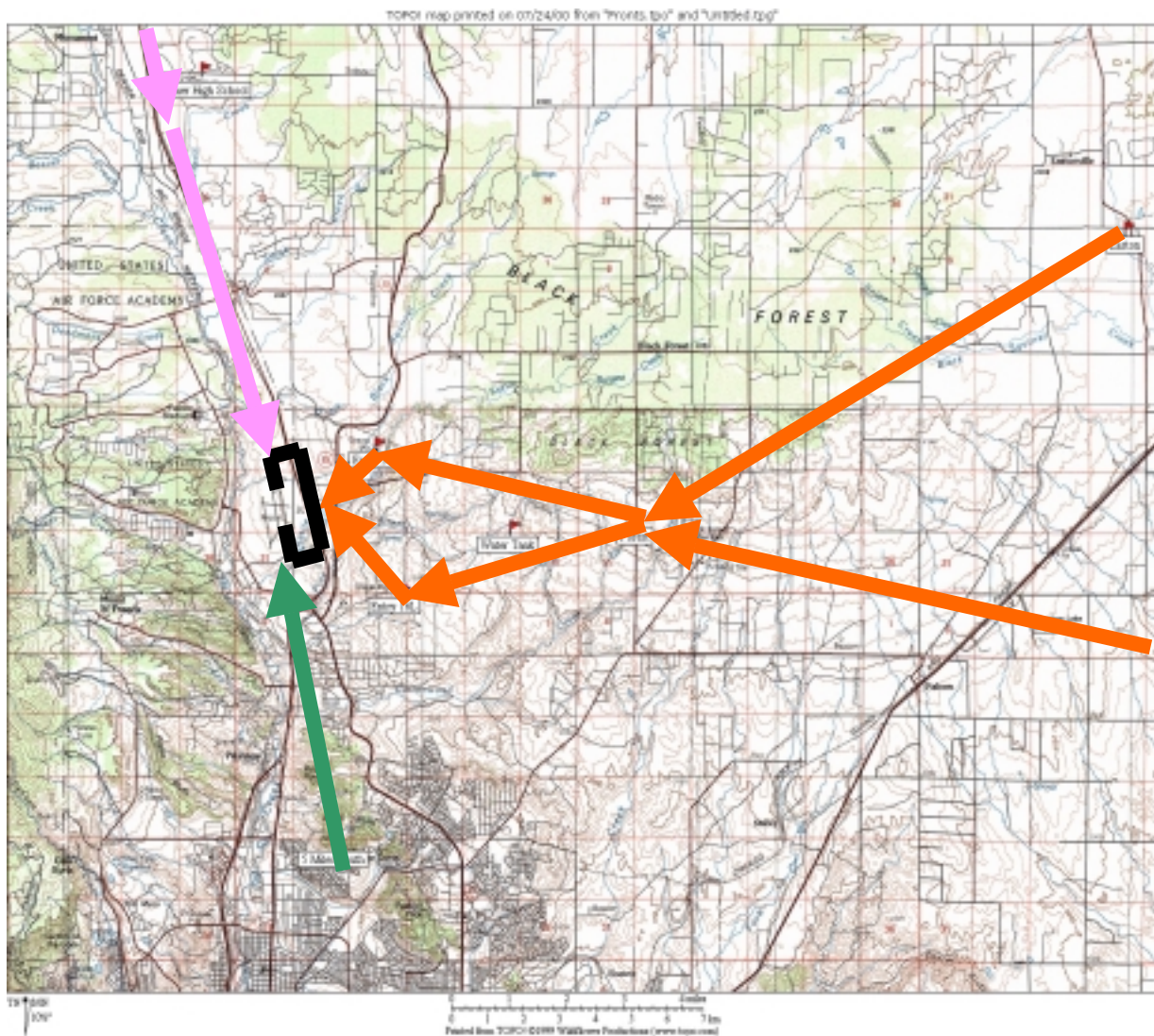


Figure 2-1
Departure Routes



- East Arrival
- South Arrival
- North Arrival



Figure 2-2
Arrival Routes

2.5 Eliminated Programs and Mitigation

Several alternative programs to train pilot candidates were evaluated. All of these alternatives were evaluated based on the Academy's needs and mission objectives. In addition, the Academy evaluated routes and flying procedures to find ways to mitigate the impact of an Introductory Flight Training program on the surrounding environment. The programs and mitigation measures the Academy eliminated are discussed below. The program and mitigation measures that have been retained are discussed in Section 2.6.

2.5.1 Alternative Training Programs Eliminated from Consideration

2.5.1.1 Expansion of Aero Club Operations

One of the alternatives discussed was to expand the Aero Club operations to include more aircraft and instructors such that the entire Introductory Flight Training program could be handled by the Aero Club. The Aero Club currently trains approximately 150 of the 550 pilot candidates. This alternative was eliminated when the Aero Club decided it did want to conduct the entire Introductory Flight Training program.

2.5.1.2 Academy Purchase of New Aircraft

A second alternative was for the Air Force to purchase a fleet of new aircraft to replace the T-3A, and to use Air Force instructors for training. However, the Air Force would not support the purchase of new aircraft for the Academy. In addition, the Air Force currently has a shortage of active-duty pilots, precluding use of Air Force instructors as a feasible option.

2.5.1.3 Contractor Purchase of Aircraft/Academy Instructors

A third alternative was to use contractor-owned and maintained aircraft with Academy instructor pilots conducting the training. This alternative was determined to place too much liability risk on the contractor, and would be costly to insure. Additionally, like the second alternative, there would not be enough Air Force instructor pilots to conduct the training.

2.5.1.4 Train Cadets at Facilities Outside of the Academy

Many alternative methods of training the cadets fall under this broad category including contracting private training schools (local and remote), or having cadets individually pursue introductory flight training at a school of their choice. All of these alternatives and others involving sending cadets away from the Academy have the same drawback – they would not fit into the cadet's 4-year academic schedule. The least time-consuming of these alternatives, using local private schools, requires 2 hours of travel time for each flight training day. In terms of scheduling, it requires the cadets to dedicate a full day every other day to flight training. Without making unreasonable changes to the academic curriculum, this requirement would not fit the cadet's schedule. Likewise, sending cadets away for extended training periods does not fit their schedules. All eight semesters of the academic year are filled with academic courses and the summers are filled with military and leadership training courses.

2.5.1.5 Train Recent Graduates at Facilities Outside of the Academy

This alternative requires waiting for cadets to graduate and then training them at facilities away from the Academy. Recent graduates could be sent to non-Air Force facilities such as local or distant private schools, or perhaps they could pursue lessons privately and receive reimbursement from the Air Force. The Academy found these options unacceptable for several reasons. First, using non-Air Force training facilities would not meet all mission objectives. The Academy would not have direct oversight, there would be no opportunity for military mentoring, and there would be no Specialized Undergraduate Pilot Training-like atmosphere. Second, because it is committed to producing the “best lieutenants in the Air Force,” the Academy must take responsibility for preparing its students academically and professionally. Providing all of its students introductory flight training under an Academy-controlled program is the best way to ensure the best possible training. Third, the Academy must maintain a powered flight program at the Academy as a matter of tradition and prestige. The American public and prospective cadets expect powered flight at the world’s premier Air Force Academy.

2.5.2 Mitigation Measures Eliminated from Consideration

2.5.2.1 Regularly Vary the East Departure Route

A suggestion made by the public was that the Academy regularly vary the East departure route and thereby spread the noise effects over a wider area. The thought was to “share the noise” rather than subjecting one set of houses to repeated noise. The Academy determined this was an unsafe option. The purpose of each of the flight routes is to keep aircraft travelling the same direction in specified airspace. This adds the element of predictability, because pilots and air traffic controllers know what to expect in regard to traffic flow. Varying the route defeats the purpose of having an established route, adds complexity, and takes away predictability. As such, flying becomes more difficult for student pilots and safety is reduced.

2.5.2.2 Change Launch Times so that Aircraft do not Fly so Early in the Morning

The public, especially citizens from Black Forest, considers the noise from early morning flights particularly annoying. Unfortunately, several factors make early morning flights necessary. First, there is a high rate of flight cancellation due to weather conditions. The Academy airfield typically has a 40 percent flight cancellation rate in the summer. As a result, the Academy must fly from sunrise to sunset to meet its requirements. Additionally, early morning weather conditions are most conducive to flight. Morning air is inherently more stable with less severe wind, fewer occurrences of wind sheer, and less turbulence. Thus, the frequency of poor weather, combined with the optimum flight conditions that occur in the early morning, prohibit the Academy from abandoning early morning flights.

However, there are several ways in which the Academy can reduce the number of early morning flights as described in paragraph 2.6.2.4.

2.6 Retained Program and Mitigation

2.6.1 Academy Based Introductory Flight Training Program

To meet the needs and mission objectives of the Academy and the Air Force, the Introductory Flight Training program must be reconsolidated at the Academy. That is, the Academy needs to return to the type of program it conducted from 1967 to 1997. Specifics of the program are described in Section 2.8.

An off-base operation for recent graduates might be possible, but the Academy cannot envision a scenario that would meet the needs and objectives of the Introductory Flight Training program. However, part of the rationale in privatizing the Introductory Flight Training program was to permit contractors to explore combinations of aircraft, local airfields, and logistics capabilities that may meet the requirements of the Introductory Flight Training program. Therefore, the Academy will allow contractors to submit proposals that include using off-base programs for training recent graduates. The programs will have to meet the mission requirements of the Introductory Flight Training program and do so in an environmentally acceptable manner. If an off-base operation were selected, the Academy would likely have to reissue the EA.

2.6.2 Mitigation Retained

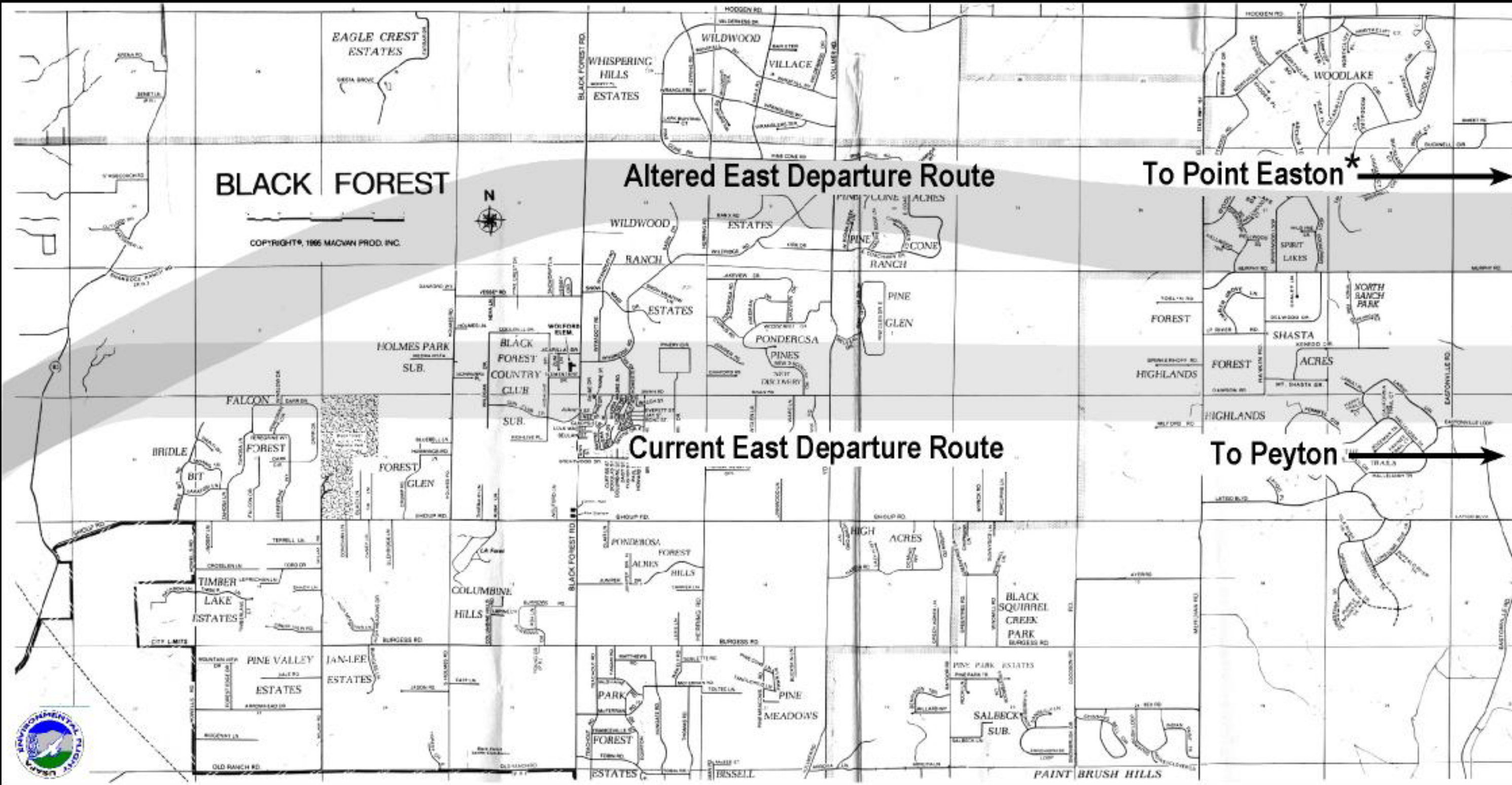
The public used several means to voice its concerns regarding the Proposed Action. Some attended the Academy's open houses where they spoke to Academy representatives and filled out comment cards. Others phoned in their comments directly to the Academy or the Academy's toll free hotline. Finally, some wrote letters directly to the Academy or to their Congressmen.

The public was primarily concerned about noise, safety, and early morning flights. Thus, the mitigation measures described below focus on these concerns.

2.6.2.1 Alter the East Departure Route

Much of the concern regarding the Proposed Action revolves around flights on the East departure as the aircraft pass over Black Forest. This is of particular concern because much of Black Forest is topographically elevated relative to the other areas east of the Academy. The Academy researched routes that would allow its aircraft to take off heading north, and then turn east to transit to the training areas. A variation of the East departure, a route the Academy has used with minor changes since the 1970s, would be a good route. The altered departure starts with a takeoff to the north followed by a turn at North Gate Road towards the north side of the Black Forest radio tower. (See Figure 2-3.) At the tower the aircraft would turn to the east and fly to the intersection of Elbert Highway and Murphy Road. The Academy defines this intersection as point Easton. The altered route has several favorable characteristics.

- Overall the ground elevation is slightly lower on the altered route. This means the aircraft fly higher above the ground level when they are at their standard flight level of 8,500 feet mean sea level (MSL)



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* Easton is an Academy navigation point located at the intersection of Elbert Road and Murphy Road

Figure 2-3
East Departure Routes

-
- In-bound traffic for the Colorado Springs Airport is at a higher altitude when it crosses the altered route. This increases the opportunity for Academy aircraft to fly the track at a higher altitude (see Figure 2-4).
 - The terrain under the altered route is less forested, and thus offers more suitable areas for emergency landings.
 - The altered route exposes fewer residential neighborhoods to overhead aircraft noise.
 - A portion of the altered route transits land with few homes and low probability of development.
 - The altered route permits easy avoidance of schools.

On the other hand, the altered route has a few drawbacks:

- The altered route will increase transit time to the training areas.
- Between the north gate and the radio tower the aircraft may deviate from the desired track more often because the tower is sometimes difficult to see from the north gate.
- The altered route will shift aircraft noise to a different location.

2.6.2.2 Reestablish the Southeast Departure

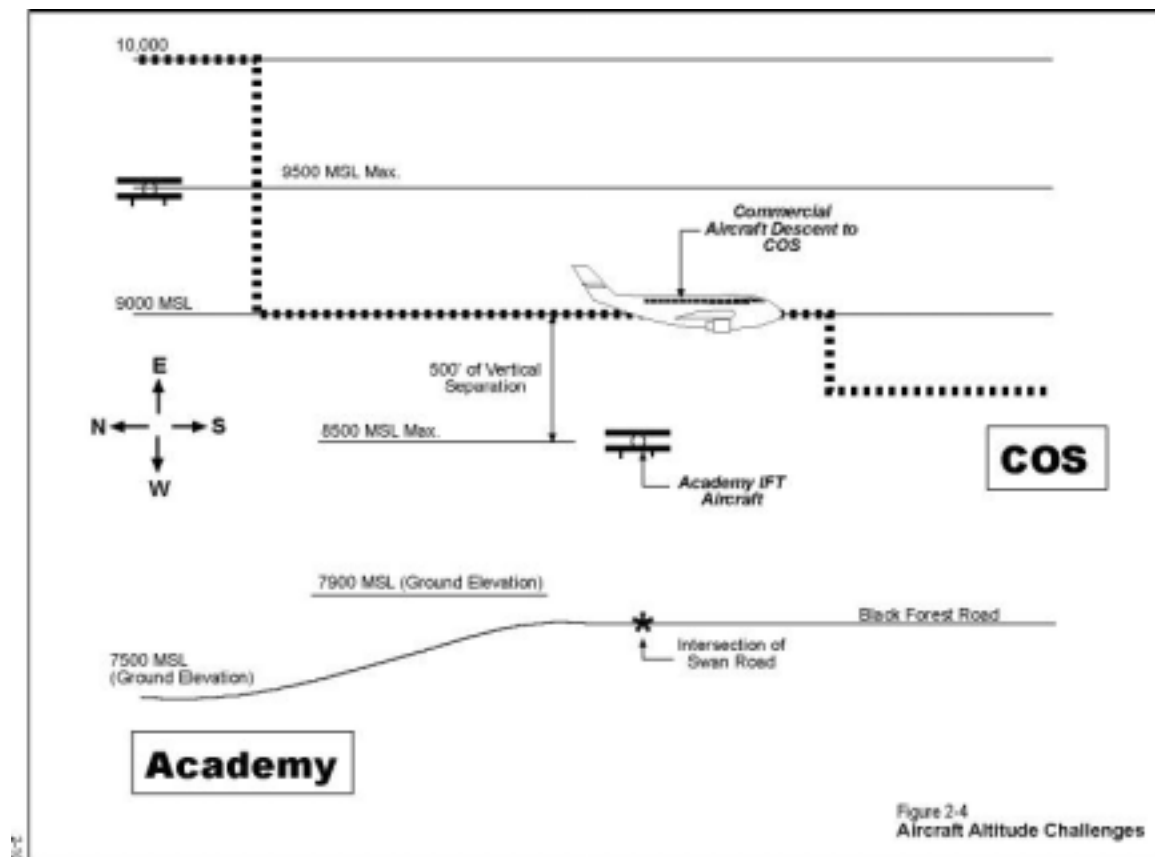
The Academy also investigated ways to reduce the use of its current routes to lessen the burden caused by the increased flight activity of the proposed program. The Southeast departure route was used from 1994 to 1997. Aircraft on this route leave the Academy heading south and turn east over the Patty Jewett Golf Course (Figure 2-1). From this point, the route heads to the Colorado Springs Airport, and then due east. Aircraft on this route fly at 9,500 feet MSL by the time they reach the golf course. This altitude, combined with the relatively lower elevation of Colorado Springs, places the aircraft fairly high above the ground and buildings. Increasing the use of this route would reduce the amount of traffic on the Woodmen departure route. When combined with a downwind departure, this route will also reduce flights over Black Forest (see paragraph 2.6.2.4). The Colorado Springs Airport has no objections to increasing the use of the Southeast departure. The downside is this route requires a longer training period and valuable time is lost enroute to training areas.

2.6.2.3 Increase the Altitude of the Aircraft

Another avenue of mitigation the Academy pursued was to find a way to increase the altitude of its aircraft as they flew east towards the training areas. The current East departure altitude is 8,500 feet MSL until the power lines just west of Meridian road, then 9,000 feet MSL to the training areas. Currently, the Academy aircraft do not fly higher because they are restricted to their current altitude by a letter of agreement with Colorado Springs Approach Control. The letter restricts the altitude to ensure aircraft do not enter the flight path of aircraft landing at the Colorado Springs Airport (Figure 2-4). The Academy's aircraft can request clearance to higher altitudes, but the training aircraft are rarely able to fly any higher than 8,500 feet on departure (especially in summer), because the aircraft's climb rate is inadequate. Thus, it was futile to plan for clearance to a higher altitude. The Academy expects the new training aircraft, however, to routinely be able to fly at a higher

altitude. A new letter of agreement has already been drafted requesting controllers to automatically clear Academy aircraft to a higher altitude whenever possible.

Figure 2-4



Colorado Approach has no objections to the new letter. Thus, under the Proposed Action, flying at a higher altitude over the altered departure route is a viable option and would be relatively easy to include as part of standard operating procedures. Furthermore, the noise study (see Section 4.5) indicates flying 1,000 feet higher reduces aircraft noise by approximately 3dB.

2.6.2.4 Reduce Early Morning Departures Through Several Means

Although the Academy cannot completely eliminate early morning departures (see paragraph 2.5.2.2) there are several ways the Academy can reduce the number of flights using the eastbound departure routes in the early morning. First, the Academy can schedule the north and southbound flights to take off first, thus delaying the departure of eastbound aircraft. Second, the Academy can direct its instructors to use the North, South, and Southeast departures if weather and training requirements permit. Third, the Academy could schedule early takeoffs for the aircraft practicing airport traffic patterns at the Academy Airfield. This also would delay the start of eastbound flights. Finally, when airport traffic and weather conditions permit, the Academy could direct its early morning eastbound traffic to use downwind departures to the Southeast departure route. This could be used only by aircraft taking off towards the north. Typically morning winds at the Academy are from the north, and eastbound traffic would therefore usually take off heading north and use the East departure. They then would turn east towards the Black Forest Road radio tower (Figure 2-3). With a downwind departure, however, the aircraft would essentially complete a U-turn after takeoff and head south, or downwind, until they intersected the Southeast departure, at which point they would follow it east (Figure 2-1). On occasions when these procedures could be used, they would reduce early morning traffic on the eastbound routes, particularly traffic over Black Forest. Nonetheless, when these options are not available, early morning eastbound traffic will occur. To ensure the sustainability of these procedures, the Academy would incorporate them into the Operating Instructions.

2.7 Detailed Description of the No-Action Alternative

Under the No-Action alternative, a limited number of pilot candidates at the Academy would continue to receive flight training through the Aero Club. The remainder would be trained at local off-base schools. Approximately 550 pilot candidates receive their flight training in this manner on an annual basis. All other flight activity (glider, parachute, motor glider and flying team)at the Academy would continue at existing levels. Additionally, night flying operations in support of introductory flight training would continue at Peterson AFB.

2.7.1 Aircraft

Under the No-Action alternative, the Cessna 172 and T-41 trainer aircraft currently used by the Aero Club would continue to be used for flight training at the Academy. The Cessna model is a propeller aircraft powered by one 180-horsepower Continental IO-360-D piston engine. The T-41 is a military version of the Cessna 172 with slightly higher horsepower. Additionally, the Cessna 172 or similar aircraft would continue to be the aircraft most likely used at the private training schools conducting off-site training.

2.7.2 Operations

In 1999, approximately 229,130 total flight operations were logged at the Academy. A “flight operation” is considered to be any one of the following: a takeoff (departure), a landing (arrival), or the individual climb-out and descent parts of a closed pattern, such as a touch-and-go.

The total number of flight operations includes Cessna 172 flight training operations, as well as jumping operations, flying team operations, other Aero Club operations, glider missions (tow planes and gliders), motorized glider operations, and parachute activities. Glider missions comprise the majority of activity at the airfield. Under the No-Action alternative, the future number of total flight operations at the Academy would remain essentially the same. The number of students receiving their introductory flight training through the Aero Club would also remain the same.

2.7.2.1 Personnel Requirements

Oversight for the current flight training program is provided by four officers, two full-time civilians and one enlisted person. Under the No-Action alternative, this manpower structure would remain essentially the same, although 9 positions are authorized.

2.7.2.2 Night-Flight Training

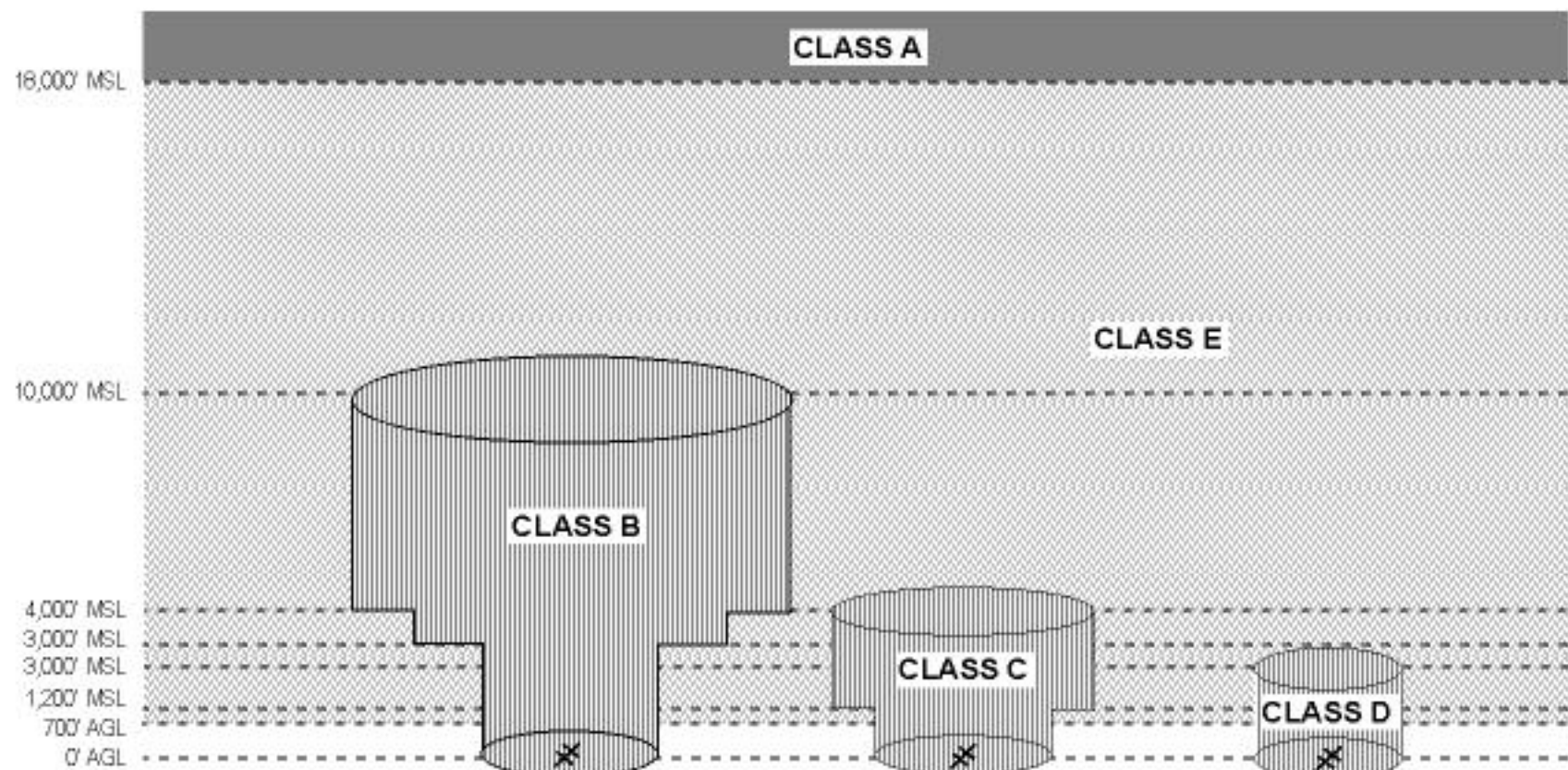
No night-flight training would occur at the Academy under the No-Action alternative. Night-flight operations would continue at an off-base location. Night-flight training would continue at Peterson AFB for pilot candidates through the Aero Club and at other airfields currently used by private contractors for training lieutenants.

2.7.2.3 Airspace Requirements and Routes

The airspace at the Academy is Class D (see Appendix D) and includes the airspace from the surface to an elevation of 2,500 feet above the airport elevation. The air traffic control personnel at the Academy provide flight monitoring and aircraft separation services for visual flight rule aircraft in the vicinity of the Academy airfield. Bullseye Auxiliary Airfield, a destination point for the Introductory Flight Training program aircraft, and most of the training areas, are located in Class E airspace. (Figure 2-5 visually displays the FAA-controlled airspace classifications.) For the current flight training program at the Academy, there are four major departure routes. The Woodmen and East departure routes lead to training areas approximately 10 to 20 miles east of the Academy (Figure 1-3). The other two departure routes are used to travel to and from training areas and local airports for takeoff and landing practice. The North Departure leads to Centennial Airport outside of Denver as well as training areas to the east of Greenland, and the South Departure leads to the Colorado Springs Municipal Airport, Pueblo Municipal Airport and Butts Army Airfield.

FAA regulations require all aircraft to fly at least 500 feet above ground level (AGL) over sparsely populated areas. Academy aircraft transiting to and from the Bullseye Auxiliary Airfield through Class E airspace are required to stay 500 feet below the Colorado Springs Municipal Airport’s instrument landing system (ILS) approach path to Runway 17L.

Aircraft going in and out of the Colorado Springs Airport are under positive FAA control, flying at altitudes of between 8,500-9,000 feet MSL. The topography in the area north of the Colorado Springs Airport, specifically in the Black Forest area, is at or above 7,500 feet MSL.



AGL - above ground level
MSL - mean sea level

NOTE: Altitudes not to scale.
Source: FAA 1993.



Figure 2-5
FAA Controlled Airspace
Classifications

A 7,500-foot MSL elevation, combined with the requirement to fly 500 feet AGL and the need for protection of the arrival airspace into Colorado Springs Airport at 8,500 feet MSL, potentially limits the Academy aircraft to a narrow band of airspace between 8,000-8,500 feet MSL. This band is dependent on activity at Colorado Springs Airport but the altitude for Academy aircraft is quite limited and cannot be modified without coordination with the Colorado Springs Approach Control via a radio request placed by the Academy aircraft prior to transiting Colorado Springs Airport airspace.

2.8 Detailed Description of the Proposed Action

Under the Proposed Action, all of the pilot candidates eligible for introductory flight training would be trained by a contractor under the contract to the Academy. The majority of the flight operations would take place within a 65-mile radius of the Academy and the contractor would be supervised by the Academy, specifically the 557th Flying Training Squadron. The contractor would provide trainer aircraft and be responsible for the maintenance and servicing of those aircraft, provide qualified flight instructors, and generally administer the flight training curriculum and other aspects of the program as directed by the Academy. The contractor would use existing Academy airfield facilities for fueling, parking, utilities, maintenance, supply, and aircraft storage. The contractor would use four Air Force instructor pilots in addition to the contracted pilots.

2.8.1 Aircraft

It is estimated that the contractor providing the Introductory Flight Training program would require approximately 40 to 50 aircraft to meet the needs of the program. The type of aircraft to be used for the Introductory Flight Training program have not been selected; the contractor selected to operate the program would choose and provide the aircraft. The current plan for the Introductory Flight Training program calls for the award of a contract by April 2001. However, the contract being sent out for bids specifically states that the award of the contract is contingent upon approval of this EA and associated FONSI documents. Based on the technical specification being prepared for the contract, the T-3 aerobatic airplanes previously used at the Academy would be excluded from use.

The new aircraft will likely be active for more days per year than the previous aircraft. This is because the newer aircraft will be better equipped to handle the high density altitude prevalent at the Academy. The new aircraft will be designed with more efficient engines and wings to adequately perform on hot days.

The specifications developed for the proposed Introductory Flight Training program aircraft are presented below (Table 2-1). The aircraft selected for use in the Introductory Flight Training program would balance the needs of the program and cost to provide the best value and assure the safety of the trainees and surrounding communities.

TABLE 2-1
Introductory Flight Training Program Aircraft Specifications*

Critical Items	Desired
FAA-certified normal cat or higher	Fuel burn rate of 11 gph or less
Tri-cycle gear	Vmax of 130 KTAS at 8500 DA
Crosswind: 20 kts required	Noise level of 80 dB or less
Wt and Balance within limits for solo/dual loading and 3.5 hrs fuel	Visibility of 270 degrees (horizontal)
2x1.5 hr sorties + 30 minute reserve	Nosewheel steering
Rate of Climb at 10k feet DA of 500 feet per minute	Rate of Climb at 10k feet DA of 600 feet per minute
Sustained level 45-degree turn at 10k ft DA	Aborted takeoff at 10k feet DA: 3000 feet or less
Rejected takeoff at 10k feet DA: 3500 feet or less	Flight and engine instruments visible from both seats
Aircraft dimensions within 37.5' length x 39.75' span x 9.7' height	Avionics: GPS unit
Accommodates sitting heights of 34" to 40"	
Avionics: 2 units capable of Comm. and VOR tuning	
Stalls: maintain aileron and rudder effectiveness	
Stability and Control: Longitudinal stability of at least 0.12 lb/kt	
A/C flight controls, fuel controls, and circuit breakers reachable from both seats	

* A failure of any one of the critical items disqualifies the aircraft from being selected for the proposed contract. However, FAA certification or demonstration before the proposal closing date may clear the item. The absence of the desired items does not prevent an aircraft from being selected. However, the presence of these items makes the aircraft more favorable to the contract selection board. Desired items are listed in order of importance.

There are a number of aircraft currently in production that meet the requirements of the Introductory Flight Training program. Table 2-2 lists the types of planes that could be used. Please note, this table is not all-inclusive nor does it indicate a preference on the part of the Academy for any of these aircraft. The Cessna Skyhawk SP will be used to represent the impacts expected to occur if the Proposed Action is implemented. The Cessna Skyhawk SP represents a typical aircraft in terms of noise and air emissions.

TABLE 2-2
Existing Production Aircraft that meet Introductory Flight Training Program Requirements

Aircraft	Engine Power	Ft/min @10,000' DA	Max Cruise (KTAS)	Fuel Burn (GPH)	Noise < 80 dB ?
Cessna 182 Skylane	230 hp	810	143	9.1	Yes
Cirrus SR20	230 hp	629	135	10.1	Yes
Diamond Katana DA20	125 hp	603	133	4.5	Yes
Diamond DA40	180 hp	730	139	8.0	Yes

TABLE 2-2

Existing Production Aircraft that meet Introductory Flight Training Program Requirements

Aircraft	Engine Power	Ft/min @10,000' DA	Max Cruise (KTAS)	Fuel Burn (GPH)	Noise < 80 dB ?
Eagle 150B	125 hp	539	129	5.2	Yes
Grob 115E	180 hp	582	126	8.5	Yes
Lancair Columbia 300	310 hp	781	177	11.3	Yes
Luscombe Spartan 11E	185 hp	615	123	8.7	Yes
Maule MT-7	235 hp	910	132	10.0	Yes
Mooney Ovation 2	280 hp	915	182	9.0	Yes
Piper Archer III	180 hp	468	123	6.6	Yes
Zlin	235 hp	502	128	10.8	Yes

2.8.2 Operations

The proposed Introductory Flight Training program at the Academy would continue to train approximately 550 pilot candidates annually.

The program would require 50 total hours of flight training for each student, to include as a minimum:

- Maximum of 40 hours dual (to include 3 hours of dual cross-country)
- Minimum of 10 hours solo (to include 5 hours of solo cross-country)

Additionally, students would receive ground training, hooded instrument flight, stage checks and exams, and a final FAA test and checkride.

The Introductory Flight Training program would be run on a progressive-sortie basis, with an average sortie time of 1.5 hours. This is similar to the existing T-41 and C-172 trainer aircraft sortie time of 1.6-1.7 hours, excluding taxi time.

Table 2-3 shows the number of sorties, Introductory Flight Training program periods, and students per period that would occur under the Proposed Action.

TABLE 2-3

Proposed Introductory Flight Training Program Specifics

IFT Program Element	School Year	Summer Semester
Sorties per Day	96	120
IFT Program Periods	8	10
Students per Period	12	12

Remaining planes would take off from Academy airfield and proceed to the remote training areas.

Aircraft in the Introductory Flight Training program would use existing, reestablished, and altered flight routes and closed patterns at the Academy and other airfields. The number of

sorties on these routes will be approximately 10 percent higher than the number of sorties flying these routes under the previous consolidated program in 1997. Note, since 1997 the current number of sorties using these flight routes has been artificially low, due to the temporary readjustment of the Introductory Flight Training program.

Table 2-4 shows the planned number of flights per day on the main flight paths for past (1994-1997), current, and proposed use. Additionally, Table 2-5 shows the approximate number of active flying days per season. Currently, weather conditions frequently cause the training flights to be suspended. With the new aircraft, the anticipated number of actual flying days will increase, due to improved engine design that enable the aircraft to fly in very hot conditions. Additionally, the proposed aircraft specification will allow for aircraft to perform in higher cross winds.

TABLE 2-4
Comparison of the Daily Flight Activity on Departure Routes of Past, Present and Proposed IFT Programs

Departure Route	Number of Planned Flights Per Day		
	Past (1994-1997)	Present	Proposed
North in Summer	14	3	15
North during School Year	11	3	12
South in Summer	14	3	15
South during School Year	11	3	12
East in Summer	13	9	30*
East during School Year	10	9	24
Woodmen in Summer	18	9	20
Woodmen during School Year	14	9	16
Southeast in Summer	50	0	40
Southeast during School Year	40	0	32
Total in Summer	109	24	120
Total during School Year	86	24	96

* Represents worst case. Numbers would decrease if flights are diverted to downwind departure (see paragraph 2.5.2.2)

TABLE 2-5

Comparison of the Total Number of Days of Flight Activity by Season from Present and Previous IFT Programs, and the Number of Days Expected for the Proposed IFT Program

Season	Number of Days Active within Season		
	Past (1994 -1997)	Present	Proposed
Spring	62	45	62
Summer	66	50	66
Fall	62	45	62
Winter	47	34	47

2.8.2.1 Personnel Requirements for Quality Assurance and Oversight

The quality assurance and oversight of the contractor-operated Introductory Flight Training program would require four officers and five additional enlisted or civilian personnel. The number of contractor employees needed to manage the Introductory Flight Training program cannot be accurately determined until the contractor is selected, but is estimated to be approximately 80 employees.

2.8.2.2 New Construction

No new construction at the airfield is planned for the Proposed Action. The existing facilities at the airfield would be adequate to store the contractor's aircraft and related supplies and existing administrative facilities are adequate to support the contractor's need for office space and briefing rooms.

The Academy has considered the addition of airfield lighting to supplement the night-flying requirements. However, under the Proposed Action night flying will continue to occur from other airports. The Academy may want to pursue the addition of lighting on the airfield at a later date, at which time a supplemental EA would likely be initiated.

2.8.2.3 Night-Flight Training

All night flying would continue to be conducted at Peterson AFB or another off-base airfields such as Pueblo airport. The training aircraft would depart the Academy during daylight hours to complete cross-country and night flying requirements. All of the aircraft would likely land at Peterson AFB and trainees would be bussed back to the Academy. Aircraft would be flown back to the Academy the following training day by trainees bussed to Peterson AFB.

2.8.2.4 Airspace Requirements

No change in the existing airspace designations at the Academy airfield or other airfields would be required to support the Proposed Action. However, activity in the Bullseye airspace will increase and return to the activity levels associated with usage prior to 1997 with the T-3 program.

2.8.3 Housing Component

Most of the recent graduates in the current flight training program must find off-base housing on their own during the training period of approximately seven weeks. In the short term, base housing would assist them and be proactive in helping them find housing.

The long-term solution for the housing shortage is to convert one of the Airmen's dorms to a Bachelor's dorm. This conversion would allow for an additional 17 rooms for the recent graduates. The conversion would include interior renovation only.

2.9 Comparison of Proposed Action and No-Action

Table 2-6 compares the elements of the Proposed Action and the No-Action alternatives.

TABLE 2-6
Comparison of Project Elements for the Alternatives Addressed in this EA

Project Element	No-Action Alternative	Proposed Action
Aircraft	T-41/C-172	See table 2-2
Operations Personnel	4 pilots, 5 support	4 pilots, 5 support
Contractor Personnel	N/A (dependent on FBO manning)	80
Location of Training	Primarily local FBOs	Academy Main Airfield
Number of Daily IFT Flights Originating from Academy	24/summer 24/school year	120/summer 96/school year
Night Flying	Peterson AFB	Peterson AFB
Pilot Candidates Trained	550 annually	550 annually
New Construction	None	None

2.10 Identification of the Preferred Alternative

The preferred alternative is the Proposed Action to implement the Introductory Flight Training program using a contractor operation located at the Academy airfield. Additionally, the Academy proposes to implement the Proposed Action by using some existing routes, altering the East departure route, reestablishing the Southeast departure, flying at a higher altitude on the East departure when cleared by the Colorado Springs Airport, and using the mitigation measures described in paragraph 2.6.2. This set of actions will become the Preferred Alternative for the Academy.

2.11 Mitigation Planned

The impacts of the Proposed Action are discussed in detail in Section 4 of this EA. Prior to the issuance of this EA, the Academy solicited public opinion on the program and held

public meetings. Additionally, comments were solicited from governmental agencies. As a result of this early request for input, the Academy learned that the primary impacts from the Introductory Flight Training program are community concerns related to noise and safety of the aircraft.

Academy officials have met numerous times to identify options to reduce noise to levels acceptable by the public. The mitigating actions and alternatives that the Academy would like to include with their Preferred Alternative are outlined in Section 2.6.

3.0 Affected Environment

3.1 Introduction

The 18,455-acre Academy is situated along the Rocky Mountain Front Range about 6 miles north of the center of Colorado Springs and 65 miles south of Denver, Colorado. The Academy is relatively new among the national military institutions, having been authorized by Congress in 1954. Today, the Academy supports a resident population of more than 9,000. Additionally, the Academy is a major tourist attraction in Colorado. Sporting events and recreational opportunities at the Academy attract thousands of visitors annually, and its scenic beauty enhances the northern entrance to the City of Colorado Springs.

The area of influence of the affected environment for the Introductory Flight Training program (IFT) is primarily the Academy airfield and the airspace above the Academy. However, the Introductory Flight Training training extends to training areas outside of the Academy, as described in Section 1, and shown in Figure 1-3. Additionally, when considering the area of influence for socioeconomic issues, the area that needs to be considered is the greater metropolitan area of Colorado Springs, located in El Paso County, Colorado.

3.2 Land Use

Land-use planning at the Academy is a component of the larger Air Force Base Comprehensive Plan (BCP) process that seeks to make full and efficient use of all available resources to fulfill the base's mission while remaining sensitive to the natural environment and quality of life issues. Within this process, land-use planning for the Academy provides a physical framework for future growth by examining the special Academy goals, needs, functions, and the relationships of the various uses. The land-use plan for the Academy provides a long-range vision in which to make long- and short-term decisions.

There are five main subareas at the Academy. The original land use plan, developed in 1955 by Skidmore, Owens & Merrill, clustered together functional groups of facilities. The five functional subareas are:

- Cadet Area
- Airfield/Flight Line
- Logistics and Support
- Housing/Neighborhoods
- Community Center

The functional subareas of the Academy are separated physically and visually by natural land forms and natural landscape settings. These physical separations are either valleys or mesas extending out from the Rampart Range. This varied landscape character, especially in the interior of the tract, allows for structure siting that takes advantage of spectacular views

within the site and beyond. However, the unstable quality of the extreme slopes found on the western portion of the Academy also means that much of the Academy is unsuitable for development.

The Cadet Area, which groups the academic, military, living, and administrative functions for the education and training of the cadets, is positioned on the highest, most visually dominant and inspiring mesa formation at the Academy. It is located at the far western edge of the site and closest to the base of the Rampart Range. It is most readily accessible from the north entrance gate of the Academy.

There are two groupings of family housing neighborhoods with shopping, recreation, and service functions of the Community Center Area located between them. The central location provides for easy access to all other areas of the Academy.

The logistical support functions are grouped at the extreme southern end of the base on a topographically level site. The position near the south entrance facilitates access for the frequent official visitors from off-base as well as deliveries (primarily from Colorado Springs).

The airfield area is concentrated along the eastern edge of the Academy. The eastern portion of the Academy is the most topographically suitable area for aircraft operations due to its relatively flat slope.

3.2.1 Main Airfield

The main airfield is organized around the north-south runways (Figure 1-2). To the east of the runways are the flight training and support facilities and the Flight Training Center, and to the west are the glider, motor glider, and jump training facilities. Physically, all required facilities for the respective flight programs are directly adjacent to the appropriate side of the airfield.

The main airfield area is defined by the eastern border area on the north and east; by the Academy southern boundary to the south; by the Service & Supply Area to the southwest; by Pine Valley Housing to the west; and by the Community Center to the northwest.

Another auxiliary airfield—Aardvark—lies at the north end of the Academy, also on the east side. Aardvark is used strictly for low approaches by the soaring program and not for touch down or landing. This runway requires only necessary safety and communications facilities.

The total land allocated to the main airfield area is 2,020 acres. The airfield operations area totals 298 acres and includes runways, taxiways, hangars, parking apron, and other maintenance and training facilities. Designated open space accounts for 497 acres in the form of runway clear zones and the jump training area. Kettle Lakes (totaling 13 acres) supports water survival training, and an additional 23 acres support field training in this area. The Thunderbird Airmanship Overlook is a tourist area that accounts for 3 acres, and the Rod & Gun Club occupies nearly 1 acre. Approximately 55 acres are classified as community service in supporting the Interstate 25 and railway corridors. The remaining 1,085 acres are classified as natural open space.

The Academy is the major site in the country conducting introductory flight training for the Air Force. In 1999, a total of 229,130 flight operations were logged by the air traffic control tower at the Academy. This total includes T-41 training flights, glider missions, motorized glider operations, parachute jumping, flying team flights, Aero Club, and other general aviation flights. Glider missions comprise the majority of activity at the airfield.

Construction of Academy airfield facilities began in 1972 using the existing Pine Valley Airfield as the primary runway and the T-41 as the pilot training aircraft. After 1974, the glider programs were added. Since that time, two additional runways have been added west of the main runway, as well as a glider strip and parachute training facilities. The current airfield mission introduces Air Force Cadets to pilot training, glider training, and parachuting.

Since the *Service, Supply and Airfield Master Plan* was completed in 1990, several additional facilities have been constructed in the airfield area. On the east side of the main runway, a new Operations Building (9206) was constructed. Other major new facilities include two hangars (9218 and 9227), the Flight Training Center (9222), and a Fuel Test Lab (9225). New construction at midfield included: the Sailplane Hangar (9234), two new Runway Supervisory Units (9228 and 9230), an Observation Tower (9229), and a Cadet Shelter (9232).

3.2.2 Bullseye

Because congested conditions at the main airfield, the Air Force built a remote training airfield approximately 30 miles east of Colorado Springs in 1987-88. This airfield, known as Bullseye Auxiliary Airfield, is located within a large section of land recently acquired by the Nature Conservancy. The land is bounded by Sanborn Road 2 miles to the north and Calhan Highway 3 miles to the east.

Bullseye is not presently equipped to house or maintain aircraft. Permanent facilities include a runway, taxiway, apron, fire station, observation facilities, and weather and communication equipment.

3.2.3 Air Installation Compatible Use Zone Study (AICUZ)

The Air Force and the Academy recognize their joint responsibility to assist local communities in dealing with the impacts of air operations on the area's land use and on public safety. As a result, the Academy is a participant in the AICUZ Program. The purpose of the Air Force AICUZ program is to promote compatible land development in areas subject to aircraft noise and accident potential. Air Force AICUZ Land-Use Guidelines reflect land-use recommendations for Clear Zones (CZs) and Accident Potential Zones (APZs) I and II as well as applicable noise zones. These guidelines have been established on the basis of studies prepared and sponsored by several federal agencies, including the Department of Housing and Urban Development (HUD), EPA, FAA, the Air Force, and state and local agencies. The guidelines recommend land uses that are compatible with airfield operations while allowing maximum beneficial use of adjacent properties. The Academy AICUZ study contains guidelines that were developed to assist local planning entities in determining land uses that are compatible with the Academy airfield environs. Recommendations from this study should be considered to prevent incompatibilities that may compromise the Academy's ability to fulfill its mission.

3.3 Airfield Operations

The purpose of the Academy airfield is to provide the facilities for the cadets' initial flight training experience. The main airfield is the primary location for cadet flight-related training. It contains the T-41 training aircraft, UV-18 "Twin Otter," glider, motor glider, parachute training, and water survival training facilities. The Flight Training Center (Aero Club) is also located at the main airfield.

3.3.1 Flying Activity

Aircraft operations at the Academy account for between 10 and 12 percent of all traffic handled by the Colorado Springs Airport's FAA Air Traffic Control Tower (ATCT). The majority of the local training activities are conducted within a 30-nautical-mile radius of the Academy. In addition to use of the main airfield, training activities are also conducted at Bullseye Auxiliary Airfield, Colorado Springs Airport, and Butts Army Airfield. To a much lesser extent, training is also conducted at Centennial Airport (Englewood, Colorado), and Pueblo Airport (Pueblo, Colorado).

In 1999, the approximate total number of flight operations at the Academy was 229,130. That number includes departures, arrivals and closed patterns. Closed patterns at the Academy are used primarily for practice takeoffs and landings by student pilots.

3.3.2 Flight Tracks

Airfield planning considers three primary aircraft operational/land use determinants: (1) potential for land-user accidents; (2) aircraft noise; and (3) hazards to operations from land uses (e.g., height obstructions). Each of these concerns is addressed in conjunction with mission requirements and safe aircraft operations to determine the optimum flight route for each aircraft type. Flight routes depicted in Section 2 of this EA are the result of such planning for the Academy main airfield. These flight routes have been configured to implement practicable mitigation measures to reduce noise impacts to the local community while maintaining flight safety standards.

Flight track configurations on- and off-base are based on the following considerations:

- Takeoff patterns that avoid heavily populated areas when possible
- Air Force criteria governing speed, rate of climb, and turning radius for aircraft that use the installation
- Efforts to control and schedule missions to keep noise levels low
- Coordination with the FAA to minimize conflict with civilian aircraft operations from the installation's main and auxiliary airfields.

Daily operations are coordinated with the FAA and flight routes are integrated to minimize conflict with civilian aircraft operations at the Colorado Springs Airport and other private, commercial, and government flying activities. Continual efforts are made to control and schedule flying to keep noise levels to an absolute minimum. Flight corridors have been selected to minimize community disturbances.

3.4 Climate and Air Quality

The Academy receives an average of 15 to 17 inches precipitation annually. Most of this occurs between March and September, with the greatest amount in July and August. Temperatures range from a mean of 30°F in January to 69°F in July. Average relative humidity ranges around 40 to 50 percent, and the percentage of sunshine remains relatively constant throughout the year at 71 to 72 percent. Prevailing wind direction is from the north-northwest, with an average wind speed of 10 miles per hour. Wind velocities in excess of 70 miles per hour occur routinely throughout the year.

3.4.1 Air Quality

3.4.1.1 Existing Conditions

Air quality in the project area is generally very good as a result of the semi-rural setting and lack of emission sources. El Paso County is currently designated as a “maintenance” area for carbon monoxide (CO), a close step towards becoming an attainment area. Although El Paso County is currently in attainment for particulate matter less than 10 microns in size (PM₁₀), there have been three exceedances of the National Ambient Air Quality Standards (NAAQS) in the past 4 years. Each exceedance occurred during winter months during temperature inversions. Primary contributors to the exceedance were fireplace emissions and fine particulates generated from street sanding operations.

As part of a comprehensive plan for improving visibility in the Denver, Colorado metropolitan area, the Colorado Air Quality Control Commission (CAQCC) adopted a visibility standard in January 1990 that involves selected counties, including El Paso County, along the Front Range of the Rocky Mountains. For Colorado’s generally pristine and scenic rural areas, there are no visibility standards. However, there are provisions in Title VIII of the 1990 Amendments to the Clean Air Act (CAA) requiring the EPA and other federal agencies to identify and evaluate sources of visibility impairment. Federal requirements exist to protect visual air quality in areas such as national parks and wilderness areas (designated as visual Class I). Colorado has 12 such areas although none are immediately adjacent to the Academy.

The Colorado State Implementation Plan (SIP), prepared by the CAQCC’s Air Pollution Control Division in 1987 and approved by EPA in October 1988, addresses only visibility degradation caused by emissions from existing or proposed major stationary sources (such as power plants). It does not deal with interstate transport of visibility-reducing pollutants (regional haze), which is considered the main problem in rural and semi-rural areas.

Numerous control strategies were adopted to reduce levels of CO in Colorado Springs. Recently, the Pikes Peak Area Council of Governments revised the Pikes Peak Region’s SIP for CO. Efforts included developing a work plan for the revised SIP and a monitoring plan to accumulate a comprehensive CO database. Aircraft were not considered major contributors to the nonattainment problem areas, and control strategies for aircraft were not included in the control plan.

Mobile pollutant sources such as military aircraft are presently exempt from formal regulatory considerations, with the exception of an air conformity determination. However,

in order to present a thorough analysis of changes resulting from the Proposed Action at the Academy, annual emissions contributions in metric tons (mT) from Academy flight operations have been included and are shown below (Table 3.4-1).

TABLE 3.4-1
Estimated Emissions Associated with Baseline
Academy Aircraft Flight Operations

Unit or Activity (Aircraft Type)	Annual Local Operations	Annual Emissions (Metric Tons)				
		CO	THC	NO _x	PM ₁₀	SO ₂
T-41	143,300	366.310	3.670	2.200	NDA	0.620
TG-7	24,200	47.370	1.070	0.210	NDA	0.050
8-GCBC	30,400	115.030	1.110	0.550	NDA	0.020
C-150	2,500	6.070	0.080	0.010	NDA	0.001
UV-18	17,000	6.600	1.100	5.280	NDA	0.720
Aero Club	13,200	61.680	0.840	0.130	NDA	0.020
Annual Totals	230,600	603.060	7.870	8.380	NDA	1.431

Source: T3-A Environmental Assessment (1994)

3.5 Noise

3.5.1 Introduction

Noise is defined as unwanted sound. Human response to noise is subjective and can vary greatly from person to person. Factors that can influence an individual's response to noise include the magnitude of the noise as a function of its frequency and time pattern (EPA, 1974). The amount of background noise present before an intruding noise occurs and the nature of the work or activity (e.g., sleeping) that the noise affects can also influence a person's level of annoyance.

The unit used to measure the loudness of noise is the decibel (dB). Most community noise standards utilize A-weighted decibels, also denoted by dBA, as the measure of noise, as it provides a high degree of correlation with human annoyance and health effects.

A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. All sound levels reported in this document are A-weighted sound pressure levels.

Table 3.5-1 depicts familiar noise sources and their approximate noise levels.

TABLE 3.5-1
Sound Levels of Typical Noise Sources and Noise Environments
(A-Weighted Sound Levels)

Noise Source (at a Given Distance)	Maximum A-Weighted Sound Level in Decibels	Noise Environment	Human Judgement of Noise Loudness
Military Jet Take-off with After-burner (50 feet)	140	Carrier Flight Deck	
Civil Defense Siren (100 feet)	130		
Commercial Jet Take-off (200 feet)	120		Threshold of Pain 32 times as loud
Pile Driver (50 feet)	110	Rock Music Concert	16 times as loud
Ambulance Siren (100 feet)	100		Very Loud 8 times as loud
Newspaper Press (5 feet)			
Power Lawn Mower (3 feet)			
Motorcycle (25 feet)	90	Boiler Room	4 times as loud
Propeller Plane Fly-over		Printing Press Plant	
Diesel Truck, 40 mph (50 feet)			
Garbage Disposal (3 feet)	80	High Urban Ambient Sound	2 times as loud
Passenger Car, 65 mph (25 feet)	70		Moderately Loud (Reference Loudness)
Living Room Stereo (15 feet)			
Vacuum Cleaner (3 feet)			
Electronic Typewriter (10 feet)			
Normal Conversation (5 feet)	60	Data Processing Center Department Store	1/2 as loud
Light Traffic (100 feet)	50	Private Business Office	1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet 1/8 as loud
Soft Whisper (5 feet)	30	Quiet Bedroom	
	20	Recording Studio	Just Audible
	10		
	0		Threshold of Hearing

Source: Handbook of Noise Control, C.M. Harris, Editor, McGraw Hill Book Co., 1979.

The level of environmental noise varies with time. To quantify noise level variations over different time periods, several noise level descriptors have been developed. The primary descriptors used in this noise analysis are the day-night average noise level (DNL), the equivalent sound level (L_{eq}), the maximum sound level (L_{max}), and the sound exposure level (SEL).

DNL (also referred to by L_{dn}) is the metric used by the Air Force and the FAA to assess community noise exposure in the vicinity of military bases and civilian and joint-use airports. DNL accounts for the greater sensitivity of people to noise during sleeping hours. DNL is the time-weighted average sound level for a 24-hour day, determined after the

addition of a 10-dB penalty for noise events occurring between the nighttime hours of 10:00 p.m. 7:00 a.m. DNL is calculated using the sound energy generated by individual noise events, the number of events occurring during a 24-hour period, and the time of day in which the events occur.

Another commonly used descriptor is the equivalent sound level (L_{eq}) which is the energy average of the sound pressure level over a predetermined period of time, such as 1 hour.

In this EA, aircraft single-event noise levels are also evaluated. The metric chosen to evaluate single-event noise levels is the maximum sound level (L_{max}). L_{max} associated with a single-event noise is the highest instantaneous sound level experienced during the noise event.

SEL is used to describe single-event noise dose, normalized to a 1-second time interval. It is a measure of maximum loudness of a noise event and its duration. SEL is always greater than the L_{max} for events with duration longer than 1 second. SEL represents the total acoustic energy for a noise event.

3.5.2 Existing Conditions

Noise at the Academy is generated primarily by flight operations. The Academy AICUZ study includes the current DNL contours around the airfield. These noise contours are generated using the Air Force NOISEMAP computer program (AAMRL, 1990). The noise contours generated by the NOISEMAP model represent different levels of noise impacts on communities and are often used as guidelines for determining zoning regulations in the vicinity of military airfields. In formulating the noise contours, NOISEMAP uses data pertaining to the existing (baseline) aircraft flight operations, aircraft types, runway utilization patterns, engine power settings and altitude profiles, flight track location, number of operations per flight track, and engine run-up (ground testing).

Existing aircraft activity results in the generation of DNL contours of 65 and 70 dB, both within the Academy boundary (See Figure 3-1).

Noise-sensitive residential locations near the Academy, including neighborhoods in Black Forest, are currently exposed to low levels of environmental noise. Additional noise sources contributing to the ambient noise environment within these areas include occasional aircraft overflights due to activities at the Academy and the Colorado Springs Airport, vehicular traffic movements on local roadways, typical activities associated with residential neighborhoods, and other natural sound sources. Short-term daytime background noise level measurements conducted at several locations (mostly rural) within the area indicate that current ambient noise level range from the mid-30s dB to above 60 dB. Average ambient noise levels (L_{eq}) are from 37 dB to 53 dB, depending on the location and occurrence of any noise event at the time of a measurement.

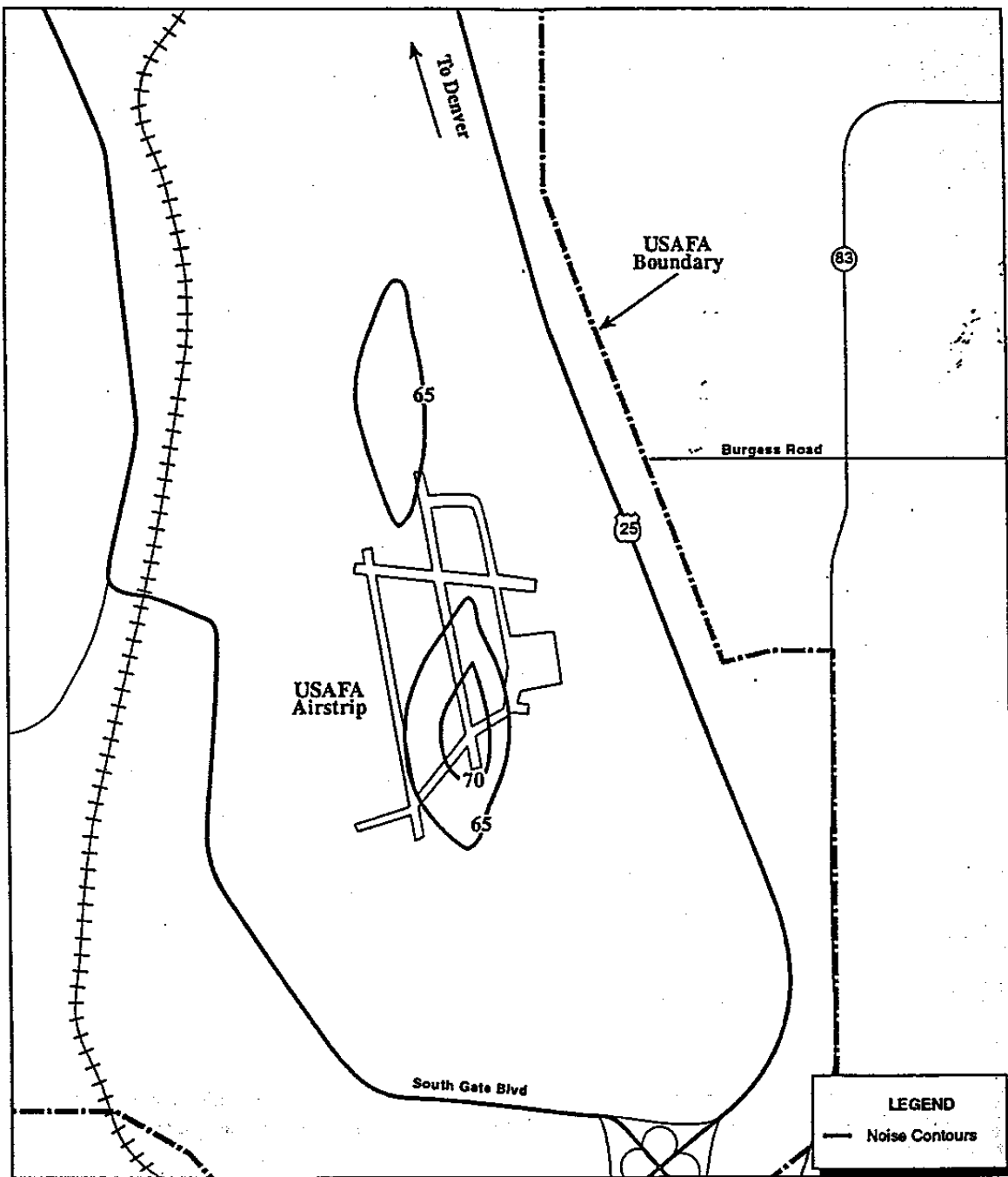


Figure 3-1
Baseline Noise Contours

3.6 Water Resources

3.6.1 Groundwater

Because the Academy is located near the western edge of the Denver Basin, much of the Denver Basin hydrogeologic information is also relevant to the hydrogeologic system at the Academy. The three types of water-bearing units present within the Academy are pediment deposits, alluvium, and bedrock aquifers. Although pediment deposits cover nearly half of the area at the Academy, substantial accumulation of groundwater in the pediment is unlikely. Recharge generally percolates into the underlying bedrock aquifers or is locally discharged by springs and seeps.

Stream-deposited alluvium is present in the stream channel of Monument Creek and its tributaries and in adjacent terrace deposits. Throughout most of the Academy, the terrace alluvium is unsaturated; therefore, well yields in the terrace alluvium are not substantial.

Bedrock aquifers in the area are part of the Denver Basin. The Denver Basin includes the Dawson, Denver, Arapahoe, and Laramie-Fox Hills aquifers, each of which outcrops on or near the Academy. The aquifers generally flow toward Monument Creek. Most of the wells on and adjacent to the Academy penetrate one or more of these bedrock aquifers.

3.6.1.1 Groundwater Quality

Analyses of water samples from the alluvium in northwestern El Paso County indicate generally good quality drinking water. A total of 10 well permits have been issued to the Academy. Seven of those wells produce nonpotable water and are used solely for irrigation. One well, located at the Sportsman's Club, is currently used for potable water. A well at the Rifle Range was found to be contaminated with radium and is no longer in use. A well at the old Visitor's Center (now the Recycling Center) is currently not in use.

3.6.2 Surface Water

The stream corridors are among the most important natural resource features at the Academy. The predominant surface water feature on the base is Monument Creek, which runs from north to south on the east side of the Academy. The headwaters of Monument Creek are in springs in the Rampart Range north and west of the main base (including the Academy's Farish Recreation Area about 6 air miles west of the Academy). Perennial streams flowing into Monument Creek from the west are from north to south Goat Camp Creek, Lehman Run, Stanley Creek, and West Monument Creek. Smith Creek and Kettle Creek enter Monument Creek from the east. About 15 other intermittent streams in the vicinity of the Academy drain into Monument Creek.

The perennial streams at the Academy are considered to be in good condition with stable shorelines and excellent riparian vegetation. Tributary streams that flow into Monument Creek from the east have been impacted by urban development, and sedimentation has been severe especially in Kettle and Pine creeks.

3.6.2.1 Surface Water Quality

Surface water quality along Monument Creek throughout the Academy is generally good.

3.7 Geology and Landform

The physiography of the Academy generally consists of a series of west-to-east-trending mesas interspersed by valleys. Valley streams drain eastward into the Monument Creek valley. Gentle southwest-trending slopes drain toward the creek from the areas east of the Academy. The western boundary of the mesas and valleys is formed by abrupt north-south-trending ridges of sedimentary rock with the steep slopes of the Rampart Range forming the visual and structural backdrop to the Academy. Elevations range from 6,376 feet at Monument Creek near the South Gate to 7,600 feet at the base of the Rampart Range near the Stanley Canyon trailhead.

The Dawson Arkose underlies much of the Academy and is visible at several areas on the base. This formation consists of sandstones that have been created by the weathering of granite. Differential weathering of the Dawson Arkose has produced several picturesque “monuments,” including Cathedral Rock that can be seen north and south of the Academy. The Rampart Fault extends north and south along the Academy’s western boundary; however, geologists consider it to be inactive.

3.7.1 Soils

Most of the soils at the Academy are derived from a granitic parent material. They are generally very shallow (horizons are not defined), and they have very little fine or organic material. Deeper soils with finer particles and organic matter occur as outwash deposition in valleys. Soils in a few areas (surrounding the airfield, in the vicinity of the stadium and Douglas Valley housing, and just east of the community center, cemetery, and golf course) have a slight to moderate erosion potential. Most of these areas are already associated with some type of fairly intensive human use. Very thin soils found on the steeper slopes of the southern and western boundaries have a high erosion potential.

3.8 Vegetation

Vegetation at the Academy is varied because of changes in topography and elevation. Land forms range from montane areas to high plains.

The Academy’s vegetation resources are significant in that they encompass the entire elevation-related gradient from prairie grasslands to montane forests. The mosaic, or pattern that the different plant communities make in relationship to one another, is a critical aspect of the biodiversity found at the Academy. Because the foothills are prime development areas along the Front Range, relatively intact foothills vegetation communities are declining in number and size.

3.9 Wildlife

Wildlife at the Academy has been well documented by the Academy faculty and through cooperative programs with the Colorado Division of Wildlife, the Nature Conservancy, the Colorado Natural Heritage Program, and the U.S. Fish and Wildlife Service.(USFWS). Wildlife species and the vegetation zones they are most commonly associated with are listed below.

3.9.1 Montane Zone

Mammals include American elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), long-eared bat (*Myotis evotis*), Abert squirrel (*Sciurus aberti*), heather vole (*Phenacomys intermedius*), porcupine (*Erethizon dorsatum*), black bear (*Ursus americana*), marten (*Martes americana*), mountain lion (*Felis concolor*), and cottontail rabbit (*Sylvilagus* spp). Common birds associated with the montane zone are mountain chickadee (*Parus gambeli*), Steller's jay (*Cyanocitta cristata*), downy woodpecker (*Picoides pubescens*), Townsend's warbler (*Dendroica townsendi*), western tanager (*Piranga ludoviciana*), northern goshawk (*Accipiter gentilis*), and blue grouse (*Dendragapus obscurus*).

3.9.2 Foothills Zone

In the Douglas fir/white fir woodland communities, the species are the same as those listed above in the montane zone.

Mammals in the ponderosa pine woodlands include American elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), Abert squirrel (*Sciurus aberti*), and coyote (*Canis latrans*). Common birds are wild turkey (*Meleagris gallopavo*), broad-tailed hummingbird (*Selasphorus platycercus*), Williamson's sapsucker (*Sphyrapicus thyroideus*), and pygmy nuthatch (*Sitta pygmaea*).

Common mammals in the oak shrubland community include mule deer (*Odocoileus hemionus*), mountain lion (*Felis concolor*), bighorn sheep (*Ovis canadensis*), small-footed bat (*Myotis leibii*), least chipmunk (*Eutamias minimus*), several mouse species (*Peromyscus* spp.), cottontail rabbit, coyote (*Canis latrans*), and red fox (*Vulpes vulpes*). Birds in this area are red-tailed hawk (*Buteo jamaicensis*), wild turkey, prairie falcon (*Falco mexicanus*), scrub Jay (*Aphelocoma coerulescens*), and rufous-sided towhee (*Pipilo erythrophthalmus*). Short-horned lizard (*Phrynosoma douglassi*), bull snake (*Pituophis melanoleucus sayi*), and western rattlesnake (*Crotalus viridis*) also occur in these areas.

Mammals in the grasslands community include spotted ground squirrel (*Spermophilus spilosoma*), plains pocket gopher (*Geomys bursarius*), and western harvest mouse (*Reithrodontomys megalotis*). Grassland birds include rough-legged hawk (*Buteo lagopus*), prairie falcon, western kingbird (*Tyrannus tyrannus*), western bluebird (*Sialia mexicana*), and vesper sparrow (*Pooecetes gramineus*).

Mammals common to the riparian communities are white-tailed deer (*Odocoileus virginianus*), beaver (*Castor canadensis*), several bat species, muskrat (*Ondatra zibethica*), gray fox (*Urocyon cinereo-argenteus*), cottontail rabbit, and raccoon (*Procyon lotor*). Representative birds occurring in or near riparian areas include great blue heron (*Ardea herodias*), spotted sandpiper (*Actitis hypoleucos*), orange-crowned warbler (*Vermivora celata*), common yellowthroat (*Geothlypis trichas*), and Wilson's warbler (*Wilsoniapusilla*). Chorus frog (*Pseudacris triseriata*), northern leopard frog (*Rana pipiens*), and other amphibians live in the riparian areas. Reptiles and amphibians have not been well documented at the Academy.

3.9.3 Protected Species

The greenback cutthroat trout and the Preble's meadow jumping mouse are the only resident species at the Academy listed as threatened under the Endangered Species Act. One

additional specie that is a candidate for federal and state listing as threatened or endangered is the streaked (plains) ragweed (*Ambrosia linearis*). Other threatened or endangered candidates or listed species that use the Academy as migrants or have potential to occur on the Academy include the peregrine falcon (*Falco peregrinus*), Mexican spotted owl (*Strix occidentalis lucida*), Arkansas darter, Ute ladies tresses (*Spiranthes divuvialis*), mountain plover (*Charadrius montanus*), and Colorado butterflyweed (*Gaura neomexicana* ssp. *Coloradensis*).

The Colorado Natural Heritage Program recently identified the extent of the Preble's meadow jumping mouse population at the Academy. The report identifies potential critical habitat areas—this includes mainly the floodplain of Monument, West Monument, Stanley, Kettle, and Deadman's creeks—and buffer zone. These potential critical habitat areas would receive legal protection, and best management practices would be required in the buffer zone.

3.10 Aquatic Systems

3.10.1 Aquatic Habitats

The Academy's cold-water perennial streams (Lower Monument, West Monument, and Stanley creeks) support reproducing populations of fish that are not native to the Academy. These are brook trout (*Salvelinus fontinalis*), Snake River cutthroat trout (*Oncorhynchus clarki subsp.*), and rainbow trout (*Salmo gairdneri*). Five species of native nongame fish occur in the warmer waters of Monument Creek: white sucker (*Catostomus commersoni*), longnose sucker (*Catostomus catostomus*), long-nose dace (*Rhinichthys cataractae*), creek chub (*Semotilus atromaculatus*), and fathead minnow (*Pimephales promelas*). The Arkansas darter (*Etheostoma cragini*) and greenback cutthroat trout are being reintroduced on the Academy as part of the overall recovery plan for the species.

The many reservoirs, lakes, and beaver ponds on the Academy support birds such as green-winged teal (*Anas crecca*), blue-winged teal (*Anas discors*), northern shoveler (*Anas clypeata*), gadwall (*anas strepera*), American widgeon (*Anas americana*), bufflehead (*Bucephala albeola*), ruddy (*Oxyura jamaicensis*), mallard (*Anas platyrhynchos*), northern pintail (*Anas acuta*), and redhead (*Aythya americana*) ducks; American coot (*Fulica americana*); western grebe (*Aechmophorus occidentalis*); Canada goose (*Branta canadensis*); killdeer (*Charadrius vociferus*); great blue heron (*Ardea herodias*); double-crested cormorant (*Phalacrocorax auritus*); belted kingfisher (*Ceryle alcyon*); and several sandpipers and swallows.

3.11 Wetlands

National Wetlands Inventory mapping was prepared for the Academy in 1993 using aerial photo interpretation and ground truthing of selected sites. Wetlands legally defined in the National Wetlands Inventory are both naturally occurring and man-made. Most wetlands on the Academy are associated with perennial and intermittent streams. Wetland systems are valuable for their functions in retaining floodwaters and filtering sediment and pollutants. The assessment of planning team members is that wetlands within drainage

corridors appear to be functioning well. The National Wetlands Inventory identified a total of 387 acres of wetlands at the Academy, or 2 percent of the total Academy acreage.

The most common wetland type identified was palustrine scrub-shrub (202.83 acres), which are seasonally flooded marshes associated with impoundments. The typical vegetation in these areas is willow. Five other types of palustrine wetlands were identified, totaling 134.88 acres. These are mainly seasonally flooded marshes, beaver ponds, and man-made ponds characterized by rush, cattail, sedge, horsetail, buttercup, willow, and cottonwood. About 50 acres of wetlands are riverine—those associated with flowing water in streams, creeks, and natural drainages.

3.12 Cultural Resources

There have been 14 known cultural resource surveys conducted at the Academy, with no recorded findings in the area of the airfield. Although few potentially significant archaeological sites are known to exist on the Academy, it must be emphasized that very little of the Academy has actually been inspected by cultural resource specialists. It is likely that undiscovered, potentially significant cultural resources exist in various locations on the Academy.

3.12.1 Architectural Resources

Construction of the Academy started in 1955 and was completed in 1958. The buildings onsite are spread over the property and are not contiguous. The architectural resources located on the Academy are divided into two categories for the purposes of this analysis: those buildings located at the airstrip and the remainder of the buildings and structures onsite.

Information from Air Force personnel indicates that the portion of the Academy containing the airstrip does not include any potential historically significant buildings or structures. Most of the structures were built in the 1970s and are constructed of tilt-up pre-cast concrete. None of them appears to possess any distinctive characteristics such as type, period, or method of construction or an association with significant persons in the past (which would make them eligible for inclusion in the National Register [36 CFR Part 60.4]).

A number of other buildings located on the Academy have been identified as potentially meeting the National Register criteria for having significant style of construction and association with significant persons (36 CFR Part 60.4). These buildings, which collectively comprise a “project,” are the largest example in the world of the style of architecture known as the International Style. The International Style was started in Germany in the early 1900s, and the trademark design consists of boxy buildings with exposed construction elements revealed on the exterior. The buildings were designed by the architectural firm of Skidmore, Owings and Merrill.

3.13 Socioeconomics

3.13.1 Population

The Academy daytime population is approximately 9,285 (see Table 3.13-1), approximately 50 percent of whom are cadets. The balance of the Academy's population consists of command, wing, faculty, and support personnel who are either military personnel or civilian employees.

TABLE 3.13-1
Academy Population Breakout

Category	Number
Officers	1,036
Enlisted	1,029
Civilian	1,928
Non-Air Force Functions Staff	1,110
Cadets and Prep School Students	4,182
Total	9,285

Colorado Springs has experienced strong population growth similar to that of other Rocky Mountain states in recent years. From 1991-1997 the population in Colorado Springs had increased by 19 percent while employment rose by 36 percent. The Rocky Mountain region (which generally includes Colorado, Wyoming, Montana, Idaho, Utah, and New Mexico) has outpaced the nation as a whole in job and population growth since 1990.

Table 3.13-2 shows population trends for the City of Colorado Springs and El Paso County. Continued steady population growth is projected through the year 2010.

TABLE 3.13-2
Population Statistics

Population	City of Colorado Springs	El Paso County (MSA)
1970	135,501	235,972
1980	215,150	309,424
1990	281,140	397,014
2000 Projection	356,790	509,700
2010 Projection	418,880	598,400

Source: Colorado Springs Chamber of Commerce. The Census Bureau defines the Colorado Springs Metropolitan Statistical Area (MSA) as El Paso County.

3.13.2 Employment

Since the 1960s, Colorado Springs has been known as an excellent site for manufacturing facilities. No single industry type dominates the market of locally manufactured products. Electronics, semiconductors, computers, and computer components occupy high-profile

segments of locally manufactured products, but metal products, industrial equipment, plastics, and printing also account for major portions of local products.

The top three categories of jobs by industry (service, wholesale/retail trade, and government) provide 72 percent of all jobs in Colorado Springs. Approximately 89 percent of these jobs are civilian despite the large military presence from surrounding defense installations. Tables 3.13-3 and 3.13-4 show current employment in Colorado Springs and military employment statistics for defense installations in the vicinity of Colorado Springs.

TABLE 3.13-3
1999 (1st Quarter) Employment Statistics

Industry	1999 Employment	Percentage
Service	75,000	33.0
Wholesale and Retail Trade	50,800	22.4
Government	36,700	16.2
Manufacturing	27,000	11.9
Mining/Construction	12,300	5.4
Trans. Comm. & Public Util.	12,100	5.3
Finance, Insurance & Real Estate	12,900	5.7
Total	226,800	100

Source: Pikes Peak Area Council of Governments 1999 (1st Quarter).

TABLE 3.13-4
Military Employee Breakdown

Fiscal Year 1999	Military	Civilian	Contractors	Total Employees
Fort Carson	15,137	2,270	1,680	19,087
Peterson AFB ^{2, 3}	5,559	2,377	2,190	10,126
US Air Force Academy ¹	2,305	2,597	701	5,603
Schriever AFB	2,281	361	1,391	4,033

Source: Colorado Springs Chamber of Commerce

¹ Totals do not include cadets.

² Total do not include the reserve employees.

³ Totals include Cheyenne Mountain AS.

3.13.3 Economic Contribution of the Academy

Tables 3.13-5 through 3.13-8 summarize the Academy's economic contributions to El Paso County. The total economic impact on this region totals approximately \$470 million, with an

estimated 9,739 military and civilian jobs created by Academy activities. The primary source for this data is the *U.S. Air Force Academy Economic Impact Analysis, 1998*.

TABLE 3.13-5
Annual Payroll by Classification and Housing Location (FY 98)

Classification	Living on Base	Living Off Base	Economic Impact
Appropriated Fund Military			
Active Duty/Statutory Tour	\$34,740,079	\$69,919,640	\$104,659,719
Air National Guard/Reserve	\$0	\$0	\$0
Non-Extended Active Duty Reserve/Reservists	\$0	\$0	\$0
Trainees/Cadets	\$36,479,359	\$0	\$36,479,359
SUBTOTAL	\$71,219,438	\$69,919,640	\$141,139,078
Appropriated Fund Civilians			
General Schedule			\$49,717,022
Federal Wage Board			\$25,553,876
Other			\$0
SUBTOTAL			\$75,270,898
Non-Appropriated Fund Contract Civilians and Private Business			
Civilian Non-Appropriated Funds			\$11,413,803
Civilian Base Exchange			\$1,578,356
Contract Civilians (not elsewhere included)			\$1,117,563
Private Business On Base			\$1,002,881
SUBTOTAL			\$15,112,603
TOTAL ANNUAL PAYROLL			\$231,522,579

Source: *U.S. Air Force Academy Economic Impact Analysis, 1998*.

TABLE 3.13-6
Estimate of Number/Dollar Value of Indirect Jobs Created (FY 98)

Type of Personnel	Number of Base Jobs	Multiplier	Number of Indirect Jobs
Active Duty Military	2,369	0.41	971
Reserve/ANG/Trainees	4,020	0.16	643
Appropriated Fund Civilians	1,875	0.55	1,031
Other Civilians	1,475	0.55	811
TOTAL	9,739		3,456
Estimated Number of Indirect Jobs Created			3,456
Average Annual Pay for Members of Local Community			\$27,266

TABLE 3.13-6

Estimate of Number/Dollar Value of Indirect Jobs Created (FY 98)

Type of Personnel	Number of Base Jobs	Multiplier	Number of Indirect Jobs
Estimated Annual Dollar Value of Jobs Created			\$94,231,296

Sources: Multipliers: Logistics Management Institute, 1995; Average Annual Pay: <http://stats.bls.gov:80/newsrels.htm#OEUS>.

TABLE 3-13-7

Expenditures for Construction, Services and Procurement of Materials, Equipment and Supplies (FY 98)

Variable	Actual Annual Expenditure
Construction	
Military Construction Program	\$17,193,000
Non-Appropriated Fund	\$3,016,000
Military Family Housing	\$6,736,652
Operations and Maintenance	\$32,662,000
Other	\$814,531
Total Construction	\$60,422,183
Total Services	\$2,743,032
Materials, Equipment & Supplies Procurement	\$26,124,045
Commissary & Base Exchange	\$8,463,906
Base Exchange	\$618,000
Health (Civilian Health and Medical Program of the Uniformed Services, Government cost only)	\$7,242,038
Education (Impact Aid and Tuition Assistance)	\$2,083,199
Official Government Travel and Per Diem	\$5,081,787
Other Materials, Equipment and Supplies Procurement (<i>not elsewhere included</i>)	\$34,496,648
Total Materials, Equipment & Supplies Procurement	\$57,985,578
TOTAL ACTUAL ANNUAL EXPENDITURES	\$144,531,806

* Includes only contracts in the local economic area or contracts requiring the use of locally supplied goods and services. Source: *U.S. Air Force Academy Economic Impact Analysis*, 1998.

TABLE 3.13-8

Total Annual Economic Impact Estimate FY 98

Classification	Economic Impact
Annual Payroll	\$231,522,579

Estimated Annual Dollar Value of Jobs Created	\$94,231,296
Annual Expenditures	\$144,531,806
TOTAL	\$470,285,681

Source: *U.S. Air Force Academy Economic Impact Analysis*, 1998.

3.13.4 Quality of Life

3.13.4.1 Installation Housing

Installation housing is concentrated in two primary areas: Pine Valley and Douglas Valley. Both of these housing areas are located on the southwest portion of the Academy.

3.13.4.2 Off-Base Housing

Year-round housing stock in El Paso County totaled 165,056 in 1998 (Table 3.13-9). Greater than 57 percent of the housing stock is owner-occupied. The vacancy rate averaged 11 percent. According to a local realtor's analysis, the median housing value in the area for 1998 was \$183,388. (Median value refers to the point at which one-half of all values are higher and one-half are lower; it is not a numerical average.) Such a home typically has 2,200 square feet.

Monthly rents for two-bedroom apartments ranged from \$547 to \$726 depending on the age of construction. Average vacancy rates in El Paso County have generally been decreasing.

TABLE 3.13-9
Year-Round Housing-1998

Colorado Springs	
Total Units	165,056
Owner Occupied	146,965
Renter Occupied	62,647
Homeowner Vacancy Rate	4.4%
Rental Vacancy Rate	13.4%
Median House Value	\$183,388
Median Rent	\$547 to \$726/mo (2br, 1ba)

Source: Coldwell Banker.

3.13.4.3 Medical Facilities

The Academy has a medical system to ensure that military personnel, their families, and cadets receive high-quality medical care. There are several wellness clinics at the Academy as well as a full-service hospital and emergency clinic. The hospital is located in the western portion of the Academy.

3.13.4.4 Shops and Services

Shops and services are concentrated in the community center located on the mesa separating the Pine Valley and Douglas Valley housing areas.

3.13.4.5 Recreation

Recreational facilities are located in the community center and the Cadet Area. Facilities include a bowling alley and athletic fields. An outdoor recreation area is located in Jack's Valley and includes fishing, hiking, and horseback riding.

Two 18-hole golf courses totaling 361 acres are located east and downhill from the Cadet Area in the Lehman Run drainage.

Base residents participate in soccer, baseball, softball, and T-ball leagues as well as youth day camps and outdoor activities. East of Falcon Stadium, the 95-site camping area and two picnic pavilions occupy about 24 acres. Fifty of the campsites have electricity, water, and sewage hookups. The equestrian center facilities comprise a small acreage; however, pastures and trails impact about 30 percent of the open space between West Monument Creek and the south boundary.

Fishing and Hunting. The USFWS has stocked trout in the Academy's nine lakes and reservoirs since the 1960s. The fishing program is also coordinated with the Colorado Division of Wildlife. Both Colorado State and Academy fishing licenses are required.

On a limited basis, hunting for mule deer and white-tailed deer is implemented as a management tool for maintaining the Academy deer population at approximately 900 to 1,000 deer. The hunting program is coordinated with the Colorado Division of Wildlife. Up to 50 percent of the deer hunting permits are allocated to the Academy personnel with the remaining permits available to the public. All fees charged for recreational hunting and fishing are used to support and administer the Academy's natural resources programs, as stipulated by the Sikes Act and AFI 32-7064.

Use by Visitors. The Academy opens its outdoor athletic facilities to the public, and tournaments of all types attract thousands of visitors annually. More than 7,000 Scouts use the Academy's Scout camping area each year. Football games in the 52,000-seat Falcon Stadium bring thousands of visitors to the base during the fall. Total annual visits at the Academy's visitor center generally exceeds 700,000 visits.

People who do not live on the base use the trails for horseback riding, hiking, jogging, and mountain biking. Many others pass through the Academy on the Santa Fe trail, a nonmotorized recreational trail that parallels Monument Creek. Recreationists are also able to access U.S. Forest Service lands from the Academy. The number of nonmilitary recreational users of the Academy's trails and parking facilities is not known.

3.13.4.6 Visual and Aesthetic Values

The following general viewpoints and viewsheds are identified as important to the visual integrity of the Academy.

1. Views from I-25—Views to the west, especially the Cadet Area, the chapel, and Cathedral Rock, are of primary importance. Views to the east are of secondary importance and contribute to the scenic quality in two ways: they create the experience

of feeling surrounded by nature on all sides while traveling through the Academy on I-25, and they preserve the scenic, natural approach to the City of Colorado Springs from the north.

2. Views from the Cadet Area and athletic fields—The Cadet Area was designed to be a secluded living, learning, and training environment. Natural views from the Cadet Area contribute to the cadets' discipline and focus, yet also provide visual relief from a rigorous and stressful environment. Because all cadets are required to participate in either intramural or intercollegiate athletics, this area includes the athletic fields north of the Cadet Area buildings.
3. Views from the visitor center—Views in all directions from the visitor center are important because this is where visitors learn about the Academy and cadet life.
4. Views from the two Northgate Boulevard scenic overlooks—These are signed, designated overlooks just north and northeast of the cadet athletic fields. Many visitors who enter or leave the Academy via Northgate Boulevard stop at these overlooks, which provide outstanding views of the chapel/Cadet Area (at nearly eye level) and the athletic fields below. Scenic quality to the south and west is especially important, but natural scenery in all directions contributes to the beauty of the Academy. The two overlooks provide similar views, but at the eastern overlook, the Rampart Range provides a dramatic backdrop.

When the Academy was master planned in the 1950s, views and scenic quality were major determinants of the placement of roads, facilities, and the Cadet Area. The Academy's scenic quality is also important to the City of Colorado Springs and is a dominant visual feature of the approach to the city along I-25. Colorado Springs' open space plan states that the mountain backdrop preserved by the Academy's grounds currently serves as an invaluable visual gateway to the city.

3.13.4.7 Public Safety

Fire Protection. Fire protection services on base are provided by the Civil Engineering Squadron/Civil Engineering Fire Protection Squadron. This department is a 75-man full-service fire department, providing for the protection of life and property, as well as managing emergencies dealing with hazardous materials and the airfield. The fire protection squadron operates out of three on-base fire stations and a fourth auxiliary station that operates only during flying exercises. A minimum of 18 fire suppression personnel are on duty at any one time. The fire protection squadron has a mutual aid agreement with El Paso County.

Police Protection. Law enforcement at the Academy is provided by the Security Police Squadron, a 70-member, full-service police department made up entirely of military personnel. The police provide base perimeter patrols, entry point controls, traffic control, general police protection, and special events control for the entire base. The base police have proprietary jurisdiction over the Academy.

The El Paso County sheriff's department has jurisdiction over all incidents on base involving civilians, which includes the public schools on base and the many tourists who visit the Academy. In addition, the State Police have jurisdiction for the I-25 easement

located on the eastern boundary of the base. The base police department provides first response to any on-base event. The Academy police department has a mutual aid agreement with El Paso County to provide Special Weapons and Tactics (SWAT) team services onsite.

3.14 Environmental Justice and Protection of Children

Environmental Justice is an Executive Order (EO 12898) designed to focus attention on the human health and environmental conditions in minority and low-income communities. Concentrated areas of low income, minority, and disadvantaged residents do not exist on-base at the Academy. As a result, environmental justice issues would be uncommon at the Academy. However, there are areas throughout Colorado Springs where the issue of environmental justice may need to be addressed when implementing a federal project.

Protection of Children, EO 13045, recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks. This EO requires federal agencies, to the extent permitted by law and mission, to identify and assess such environmental health and safety risks.

3.15 Infrastructure

3.15.1 Potable Water

All of the potable water supply at the Academy comes from the City of Colorado Springs supply main (or supply pipeline). Potable water is stored in the Academy's four reservoirs with a total water storage capacity of 3.4 million gallons. A chlorinating system is located at each potable water reservoir, and a fluoridation system serves the Military Family Housing (MFH) area. From the reservoirs, water is distributed throughout the Academy. The system was originally installed between 1958 and 1960. The potable water system is comprised of approximately 283,000 lineal feet of water mains.

3.15.2 Wastewater

The wastewater treatment plant (WWTP) at the Academy treats wastewater generated within the Academy. The WWTP is a 2.0-million gallons per day (mgd) activated sludge plant operating at approximately 1.0 to 1.4 mgd. The WWTP consists of preliminary, primary, and secondary treatments; filtration; disinfection; and sludge handling.

The Academy operates an extensive wastewater collection system that drains the major building areas and grounds from the western boundary and east to the WWTP located near the east boundary off of Stadium Boulevard. The wastewater collection system consists of approximately 330,000 lineal feet of pipe and three lift stations.

3.15.3 Electric

The City of Colorado Springs provides power to two substations at the Academy. The city owns and operates the 34.5-kilovolt (kV) overhead lines and equipment in the substations. The Academy owns and operates the 34.5-kV to 12.5-kV substation transformers and all 12.5-kV distribution equipment. The 12.5-kV equipment at the substations is metal-clad switchgear.

The distribution system is primarily concrete-encased duct bank from the substations to the Academy facilities with select and interrupt switches in manholes and transformer vaults. Most transformers are unit substation type (dry or oil-filled) and are stored in vaults in the buildings. Some are pad-mount type adjacent to buildings. There are some single-phase overhead lines to remote facilities.

3.15.4 Natural Gas

The natural gas distribution system at the Academy consists of a network with approximately 189,000 lineal feet of coated and wrapped steel and polyethylene piping, ranging in size from 1- to 14-inch-diameter. The system is the original system that was installed when the Academy was constructed in the mid-1950s.

The City of Colorado Springs provides natural gas through a single metering station. The main natural gas transmission line begins at a metering station east of Interstate 25. Gas is taken from the metering station at 50 pounds per square inch gauge (psig). The main pipeline runs west to Stadium Boulevard up to the North Gate Road. It then loops west into the MFH areas and the Community Center.

3.15.5 Solid Waste

Solid waste collection and disposal at the Academy are carried out by a private contractor. The current contract provides containers, collection, and offsite disposal for all solid waste generated at the Academy. In an effort to reduce its waste stream, the Academy composts all of its landscaping and yard waste onsite and has an onsite recycling center available to Academy residents.

3.15.6 Roadways and Traffic

Major roadways within the Academy include:

- North Gate Boulevard
- South Gate Boulevard
- Stadium Boulevard
- Academy Drive
- Parade Loop
- Interior Drive
- Pine Drive
- Community Center Drive
- Douglass Drive

Average daily traffic along primary arterials within the Academy ranges from approximately 6,500 to 10,225 vehicles per day during special events.

3.16 Hazardous Waste and Toxic Materials

The Academy currently receives and stores quantities of hazardous materials, including flammable and combustible materials such as vehicle fuels. Additional hazardous materials found at this facility include laboratory chemicals, solvents, chlorine, pesticides, and petroleum, oil, and lubricants (POL).

3.16.1 Installation Restoration Program

An Installation Restoration Program (IRP) site assessment was conducted at the Academy. The preliminary assessment portion of the IRP study identified 12 sites that could be potentially contaminated with hazardous materials/hazardous waste. Another site was added in 1993. Only four sites remain open. (See Figure 3-2.)

3.16.2 Hazardous Waste Management

Activities at the Academy generate small quantities (100 to 1,000 kilograms per month) of hazardous waste. Hazardous waste is stored onsite for up to 90 days before it is removed by contractors. The waste is stored at the base recycling center.

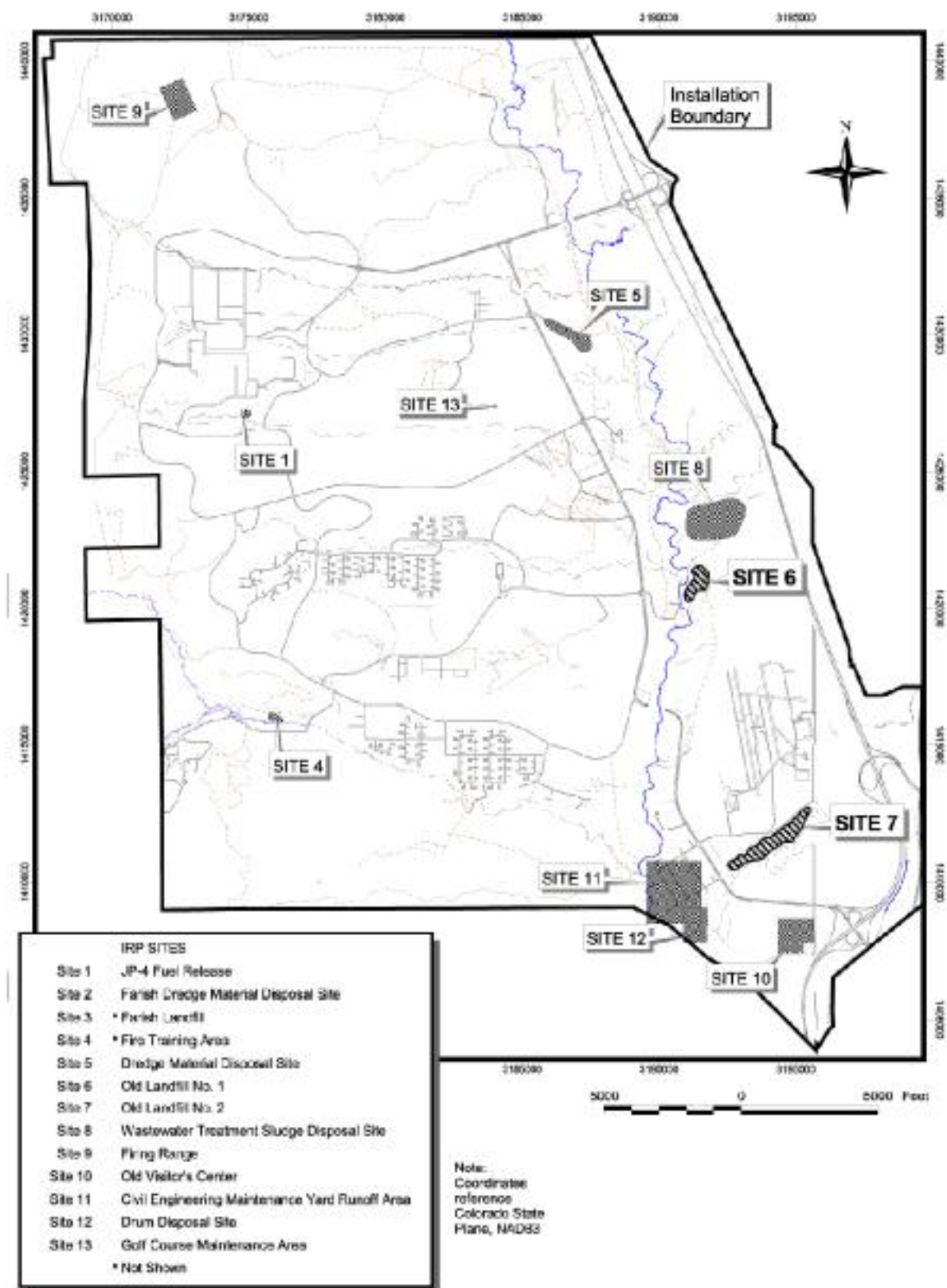


Figure 3-2
Locations of IRP Sites



The Academy currently has underground storage, aboveground storage, and nonregulated heating plant tanks located onsite. There are 16 underground storage tanks (UST) containing diesel fuel, waste oil, aviation gas, and gasoline. Existing nonregulated heating plant tanks will stay in place. All of the 28 aboveground storage tanks (AST) located at the Academy are double-walled steel vessels providing secondary self-containment.

Additional hazardous materials onsite include pesticides, and biomedical wastes. Pesticides are applied at the Academy by contractors and trained Academy personnel. Biomedical wastes are burned in the hospital incinerator.

The Academy has an existing spill prevention program, as well as a hazardous waste management plan. Copies of applicable material safety data sheets (MSDS) on file at the Academy can be obtained from the Academy's Bioenvironmental Office.

4.0 Environmental Consequences

4.1 Introduction

The primary purpose of an Environmental Assessment (EA) prepared in accordance with National Environmental Policy Act (NEPA) is to identify the potential impacts of a major federal action on the environment. The term “environment” applies to both the natural and man-made environment. If the current condition of a resource is improved or an undesirable impact is lessened, the impact is considered beneficial. Finally, a “no impact” determination is made when the Proposed Action does not noticeably affect a given resource. Cumulative impacts are those that are likely to occur over a long period of time or as a result of combining the expected impacts of two or more unrelated actions. Such impacts are discussed qualitatively at the end of this section.

This section is organized to present the potential environmental consequences in relation to the Proposed Action. The No-Action alternative is also discussed in each subsection.

4.1.1 Change in Current Mission

4.1.1.1 Proposed Action

Under the Proposed Action, an increased number of pilot candidates would receive their introductory flight training at the Academy, rather than from local pilot training schools. This change would allow the Academy to meet their mission objectives as outlined in Section 2.3.1, and would increase 1997 flight levels by ten percent.

4.1.1.2 No-Action Alternative

Under the No-Action alternative there would be no change in the Introductory Flight Training (IFT) program. The Academy would continue to be unable to meet its mission objectives for the flight training program.

4.2 Land Use

4.2.1 Issues and Concerns

The primary issues and concerns related to land use include the ability of the Academy to continue to perform its mission while maintaining the viability of the land uses at and adjacent to the Academy. Also of concern are the health, safety, and welfare of persons using land adjacent to the Academy.

4.2.2 Analysis Methodology

Noise zones associated with Academy flight operations are the primary method for analyzing impacts to land use. Noise zones were identified in the Air Installation Compatible Use Zone (AICUZ) study. The current land use, existing zoning, and future

land use of land within the noise contours are then compared to the Air Force's land use compatibility guidelines. This comparison yields the potential impacts to land use resulting from the Proposed Action.

It is important to note that the accident potential zones (APZs) associated with the Academy airstrip do not change as a result of the Proposed Action. Therefore, analysis of land use within these zones is not a factor in determining impacts.

4.2.3 Impact Assessment

4.2.3.1 Proposed Action

The Proposed Action will have a negligible impact on land use for areas adjacent to the Academy. The Proposed Action will use the existing airfield and flight areas used by the Academy over the past 30 years. It is unlikely that the increased number of sorties would cause a change in land use along the flight routes or in areas adjacent to the Academy, especially with proposed mitigation in place. However, due to the continued increase in population in Colorado Springs, the Academy may want to consider coordination efforts with the City of Colorado Springs and El Paso County to establish land use guidelines for areas below the primary flight paths.

4.2.3.2 No-Action Alternative

As with the Proposed Action, the No-Action alternative would have no effect on land use because no new activities would occur on- or off-base, and as a result, no changes in land use would occur.

4.3 Airfield Operations

4.3.1 Issues and Concerns

Changes to airfield operations would include a change in flying activity, flight tracks, or change in use of airspace.

4.3.2 Analysis Methodology

The potential for adverse impacts is contingent on the extent to which the Proposed Action would increase the number of sorties, require modification of flight routes, restrict or limit other air traffic in the area, or encroach on other airspace areas.

4.3.3 Impact Assessment

4.3.3.1 Proposed Action

Implementing the Proposed Action would cause an increase in the number of sorties over existing numbers (See Table 2-4.). The Academy has analyzed the impact of the Proposed Action and found its facilities are fully capable of handling and coordinating these additional sorties from an operations perspective, and airfield operations would not be adversely impacted.

Under the Proposed Action, current, reestablished, and altered flight paths would be used, and there would be no change to the use of training areas. Because all of these areas have been used for extended periods of time by previous introductory flight training programs there would be no new areas of impact.

4.3.3.2 No Action

Under the No Action alternative, there would be no change to the existing airfield operations, and therefore no impact.

4.3.4 Safety

All flying operations present a certain amount of risk to the operators and environment. Air Force training operations have always placed a strong emphasis on safety and risk management. The chance of an aircraft accident occurring and resulting in collateral damage such as a forest fire or injury to people or structures on the ground, however, is very low. For example, National Transportation Safety Board (NTSB) statistics on General Aviation accidents show a rate of approximately 8-10 accidents per 100,000 flying hours. The rate for fatal accidents is approximately 1.25 per 100,000 flying hours. Of these accidents, approximately 85 percent occur during the takeoff or landing phase. Furthermore, the fact that the Academy is a training operation actually *reduces* the chance of an accident. Even though instructional sorties account for 22 percent of general aviation hours, only 6 percent of all accidents occur during instructional sorties. Additionally, the structured environment and Air Force oversight further reduces the accident potential. The Introductory Flight Training program's accident rate is 1.7 per 100,000, and its fatality rate is 0.75 per 100,000, well below the General Aviation rates.

Academy pilots are trained to continually look for alternate landing sites in the event of aircraft malfunctions. In the unlikely event that an aircraft loses power, the pilot would usually have some warning and could maneuver the aircraft to a safe landing area. For example, even with no warning, flying 900 feet above the ground, with a 9 to 1 glide ratio, the pilot has more than 1½ miles to maneuver before landing.

Midair collisions pose little risk for local residents because midairs tend to happen near non-towered airports. Nationally, eighty percent of the midair collisions that occurred during "normal" flight activities happened within 10 miles of an airport. Seventy-eight percent of the midair collisions that occurred around the traffic pattern happened at the nation's non-towered airports, and about 25 percent of midair collisions occurred when aircraft flying in formation collided. Since the Academy would conduct mostly tower-controlled operations and the Introductory Flight Training program would not involve any formation flying, the probability of a midair endangering local residents would be very slight, particularly in light of the following:

- Primary flight training would be in progress—a key topic in such training is proper visual clearing for other aircraft. This is emphasized repeatedly in syllabi and training materials such as textbooks, FAA guides, and standards.
- In July 2000, the 34OG and the Academy Aero Club began requiring pilots to use Air Traffic Control services over the eastbound departure routes, a step over and above the

requirements of the Federal Aviation Regulations for this airspace (Class E airspace). The continued use of this procedure would reduce the potential for midair collision.

4.3.5 School Safety

Whenever possible, within operational and safety constraints, Academy aircraft would try to avoid recognizable noise sensitive areas. However, schools may or may not be prominent landmarks. From the air they may look similar to other structures in the area, and trees and other topographical features may further obscure identification. Asking pilots to avoid a structure that is not easily identifiable creates a safety hazard because a pilot's attention is diverted to a visual scan of the ground rather than focused on flying the aircraft and clearing for other air traffic in the area. Therefore, avoiding over flight of all schools would pose many operational constraints.

During the preparation of this EA, the status of Lewis Palmer High School as a "no-fly-over" point was raised by the public. Indeed, Lewis Palmer High School is labeled as a no-fly-over point on Academy flight maps, but the situation with the high school is unique, and therefore should not be used as a standard to be applied to other schools. Lewis Palmer High School is a prominent, orange-roofed building located in an open area next to a major interstate. It is used as a landmark to identify the "Palmer" reporting point on both the North departure and North recovery. On the North departure, the aircraft initially fly east of I-25 to ensure adequate separation from motor-gliders flying close to the west side of I-25 as they avoid the Aardvark traffic pattern which is also west of I-25. The Academy prefers to fly over the Interstate as much as possible in order to minimize aircraft noise for as many residents as possible. Lewis Palmer High School is an ideal landmark corresponding to a point on the departure where motor glider pattern operations are no longer a hazard, and it is safe to return to flight over I-25. This practice would continue under the Proposed Action, but does not constitute reason for making all schools no-fly-over points.

4.4 Air Quality

4.4.1 Issues and Concerns

Introductory flight training operations are based in El Paso County within the Colorado Springs Carbon Monoxide (CO) Maintenance Area. In October 1999, the Colorado Springs Urbanized Area was redesignated from a non-attainment to a maintenance status because the area has not had a CO violation since 1989.

Currently, the Introductory Flight Training program uses the Academy airfield as well as the local pilot training schools located at Colorado Springs Airport, and Meadow Lake Airport. All of these operations are located in the Colorado Springs CO Maintenance Area. A few operations are flown out of Centennial airport in the Denver area.

The Proposed Action will relocate the flight operations from the private training schools to the Academy airfield. Because the majority of these locations are located in the same CO maintenance area, the change in location of this operation will have a net zero change in the regional CO emissions. However, the Proposed Action will also increase the operations by 10 percent from pre-1997 levels. This increase in activity will proportionally increase CO emissions to the region.

4.4.2 Analysis Methodology

The analysis of air quality is prescribed by various regulations. Section 176 of the CAA Amendments of 1990 states that impacts upon the ambient air are considered significant if projected emissions would:

- Increase ambient levels of a criteria pollutant such that a new local exceedance or violation of the National Ambient Air Quality Standards (NAAQS) would occur
- Increase the severity of existing exceedances or violations
- Lead to the establishment of any new non-attainment area by the Governor of Colorado or the EPA
- Delay achievement of attainment in accordance with the Colorado State Implementation Plan (SIP)
- When considered together with emissions projected for the conforming transportation plans and programs within a maintenance area, cause such plans and programs to exceed any emissions reduction projections and schedules assigned or established in the SIP.

AFI 32-7040, Air Quality Compliance, Section 2.7.5., Conformity Planning, requires that the Air Force is responsible for determining if its actions conform to applicable SIPs.

40 CFR Part 93 Subpart B “Determining Conformity of General Federal Actions to State or Federal Implementation Plans” establishes the conformity requirements. Section 93.153, Applicability, paragraph (i), states that if the direct and indirect emissions resulting from a Federal action is less than the de minimis level in paragraph (b), or is less than 10 percent of the total emissions of the maintenance area’s total emission then a conformity analysis is not required for the proposed federal action.

The de minimis conformity level for CO emissions is 100 tons per year.

Colorado Air Quality Control Commission (CAQCC) Regulation No. 10, “Criteria for Analysis of Conformity,” requires that a conformity determination be made as part of the process for the preparation of any SIP, transportation improvement plan (TIP) or long range transportation plan. As part of the SIP process, an emission budget for CO is established for maintenance areas to maintain the NAAQS. The emissions budget for the Colorado Springs CO Maintenance Area as established by the Colorado Springs Revised CO Maintenance Plans (February 2000) is 270 tons per day. The current Air Force flight operations is included in this approved maintenance plan, and consequently in the current Colorado SIP.

4.4.3 Impact Assessment

4.4.3.1 Proposed Action

The Proposed Action will increase operations by approximately 10 percent above pre-1997 Introductory Flight Training operations. This action will increase local operations (includes take-offs and landings as separate operations) in the flight training program to 56,880 per year (from 51,666 per year), with a projection of emissions to 227 metric tons of CO per year (from 206 metric tons). This assumes that emissions from the new aircraft are similar or

equal to emissions from the Cessna 172. This represents an increase of approximately 21 metric tons per year. Because this is below the de minimus emission rate of 100 tons per year, a conformity analysis is not required for this proposed federal action. The daily emissions (based on 237 operational days per year) are .87 metric tons per day. This is approximately 0.3 percent of the emissions budget for the entire Colorado Springs area; therefore, it is defined as a regionally insignificant action.

The Proposed Action will not require a conformity analysis to remain in conformity with the current Colorado SIP and the action is considered to be regionally insignificant.

4.4.3.2 No-Action Alternative

The No-Action alternative will maintain the current number of Introductory Flight Training operations. Because the Academy flight operations are already included in the approved maintenance plan, there is no adverse or unapproved impact to air quality as a result of the No-Action alternative.

4.5 Noise

Increased aircraft flight activities due to the proposed Introductory Flight Training program at the Academy airfield would potentially result in project-related noise impacts at noise-sensitive locations outside of the airfield. This section describes the Academy's analysis of the potential noise impact of the proposed Introductory Flight Training program. Included below, and in appendices, is background information on criteria of noise impacts, and the effects of noise. In addition, this section describes the methods the Academy used to evaluate the impact of the noise, and the findings of the analysis.

4.5.1 Noise Impact Criteria and Guidelines

Several different agencies and groups have developed criteria to judge noise impacts against. The main applicable criterion used to determine the level of significance of noise exposure due to the Proposed Action at noise-sensitive areas potentially affected is that applied by the Air Force.

Day-night average noise level (DNL) is the community noise metric recommended by the EPA and has been adopted by most federal agencies (FICON, 1992). It has been well established that DNL correlates well with community response to noise (Schultz, 1978; Finegold, 1994).

4.5.1.1 U.S. Air Force

The Air Force has established land use noise compatibility criteria consistent with those published by the Federal Interagency Committee on Urban Noise in its publication, *Guidelines for Considering Noise in Land Use Planning and Control* (FICUN, 1980). The Air Force noise level criterion is a DNL of 65 dB. This is the threshold of incompatibility for residential and other noise-sensitive land uses, such as schools, hospitals, and religious facilities, to be developed in the vicinity of Air Force bases.

Additionally, the Air Force used the AICUZ Study, as described in Section 3.5. The AICUZ study uses a NOISEMAP computer program which generates noise contours around airfields to aid in the planning of land use around military airfields.

4.5.1.2 Other Federal Agencies

Other federal agencies, including the FAA, the U.S. Department of Housing and Urban Development (HUD) and the U.S. Department of Veterans Affairs (VA), also apply the criterion level of DNL 65 dB to residential and other noise-sensitive areas.

Pursuant to the Noise Control Act of 1972, the EPA established guidelines for noise levels “required to protect public health and welfare with an adequate margin of safety” (EPA, 1974). In its Levels Document, EPA determined that a yearly average day-night sound level of 45 dB would permit adequate speech communication in the home. The EPA recommends a noise level of DNL 55 dB or below to avoid activity interference and annoyance in outdoor areas of residential locations. These levels also apply to hospitals and educational facilities. However, the EPA guidelines do not constitute a standard, specification, or regulation.

4.5.1.3 Change in Noise Exposure

To aid in the understanding of potential project noise impacts, it is important to understand the human perception of loudness in terms of changes in noise exposure. Table 4.5-1 describes the degree of noise increase in terms of human perception of loudness.

TABLE 4.5-1
Noise Level Increase and Corresponding Human Perception of Loudness

Noise Level Increase (dB)	Human Perception of Loudness
< 3	Not perceptible
3	Barely perceptible change
5	Definite noticeable change
10	2 times as loud
20	4 times as loud

With respect to DNL, the Federal Interagency Committee on Noise (FICON) found that there are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric. It further recommended continuing the use of the DNL metric as the principal means for describing long-term noise exposure of civil and military aircraft operations. The FICON reaffirmed the methodology employing DNL as the noise exposure metric and appropriate dose-response relationships to determine community noise impacts.

Based on these findings, the FICON supported agency discretion in the use of supplemental noise analysis. It also recommended that further analysis should be conducted of noise-sensitive areas between DNL 60-65 dB having an increase of 3 dB or more if screening analysis shows that noise-sensitive areas at or above DNL 65 dB will have an increase of DNL 1.5 dB or more. The FICON decided not to recommend evaluation of aviation noise impact below DNL 60 dB because public health and welfare effects below that level have not been established (FICON, 1992). Within the DoD, the Air Force has established guidance

within its AICUZ program that a 2 dB increase within the DNL 65 dB contours is an indicator of the need for further analysis.

4.5.2 Aircraft Noise Impacts

The Air Force's standard method for evaluation of aircraft noise exposure for military bases is the use of the Air Force's NOISEMAP computer program (see Section 3.5.2). Although NOISEMAP is an appropriate method for development of day-night average noise level (DNL) contours, the public expressed concern regarding its sole use to evaluate the noise impacts. Specifically, the public felt the Academy should evaluate the noise impact in residential areas of the Proposed Action by using measurements of noise in the affected communities. Thus, the Academy conducted a supplemental noise analysis in sensitive residential areas located directly underneath the proposed flight paths.

A summary of the noise analysis the Academy conducted follows. First is a description of the NOISEMAP analysis, followed by the analysis based on the supplemental study using noise readings from residential areas.

4.5.2.1 NOISEMAP Analysis

The accepted method for evaluation of aircraft noise exposure in the vicinity of military bases is the use of the Air Force's NOISEMAP computer program. This noise model accounts for noise effects of military aircraft landings, takeoffs, and ground run-up operations based on an extensive database that has been developed from actual measurements. The NOISEMAP model and its civilian counterpart, the FAA's Integrated Noise Model, accurately predict noise levels in the immediate vicinity of an airfield where noise exposure is DNL 65 dB or above. Therefore, the use of NOISEMAP is an appropriate method for development of DNL contours to be used in land use compatibility planning studies, such as an AICUZ study, for areas surrounding an airfield.

The Proposed Action would entail a maximum of 120 sorties per day. However, the single-propeller aircraft used by the Academy creates relatively low levels of noise. Using this information, and extrapolating from the 1999 AICUZ NOISEMAP analysis, a noise expert determined that the 65 dB DNL contour will remain within the Academy boundaries. Thus, no communities located outside of the Academy would be exposed to noise in excess of the Air Force noise compatibility criterion of DNL 65 dB.

4.5.2.2 Supplemental Noise Analysis

4.5.2.2.1 Methodology

Noise level measurements of a T-41 aircraft flying along the proposed flight routes were conducted in September and October, 2000. A T-41 was used for the noise monitoring because it is similar to the aircraft the Academy expects to use for the Proposed Action, and it is not likely any of the proposed planes would be louder. A total of nine noise monitoring locations, all located along the current and altered East and Woodmen departure routes and the East arrival route, were included in the noise measurement program. The noise monitoring sites are representative of noise-sensitive residential locations potentially affected by noise generated by the proposed introductory flight training operations. Figure 4-1 depicts the approximate locations of the nine noise monitoring sites.

The instrumentation used for the measurements included a CEL 593, a Quest 2900, a Quest Q400, and a Quest RT-1000 sound level meter. All of the equipment complies with the American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC) requirements for Type 1 and 2 (precision) sound measurement instrumentation.

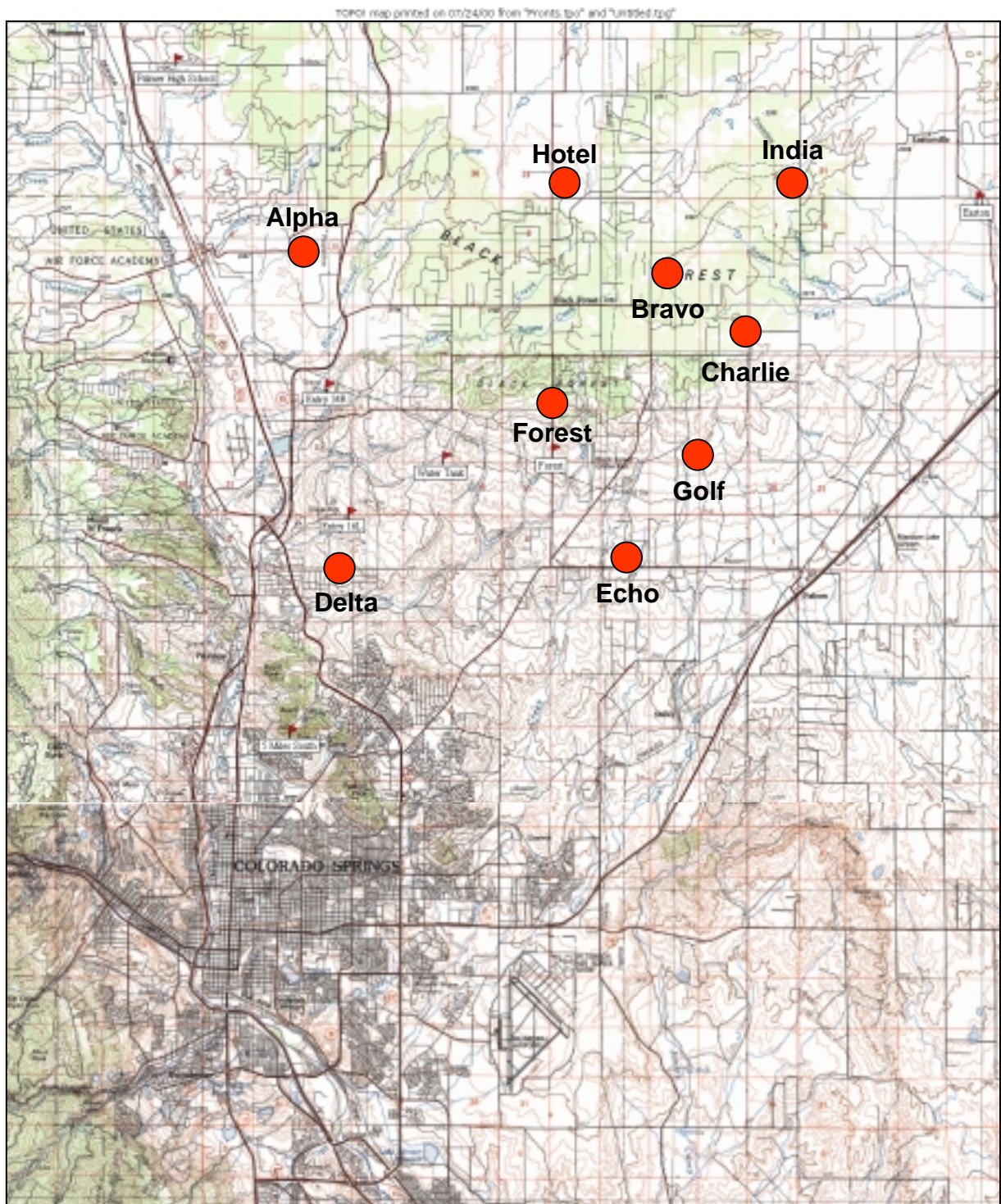


Figure 4-1
Noise Measurement
Locations

The supplemental noise analysis included the collection of single-event noise level data in terms of the maximum noise level (L_{max}) and the sound exposure level (SEL) for several overflights at each site. Also, background noise levels were collected.

In addition to the above single-event data, time histories of noise levels from a number of aircraft flyovers were also collected.

4.5.2.2.2 Results

Examination of time histories revealed that each noise event duration is just under 1 minute. During the approximately 1-minute long event, the noise level reaches or exceeds 60 dB for about 15 to 20 seconds.

Table 4.5-3 summarizes the results of the aircraft noise measurement effort. From the data shown in Table 4.5-3, it is apparent that noise levels measured at each location were reasonably consistent across the single events at each site. This is particularly true of SEL values, which generally varied by no more than 3 dB at each location.

TABLE 4.5-3
Summary of Aircraft Noise Level Measurement Data

Monitoring Site	Altitude, Ft. AGL	Number Sampled	L _{max} , dB Mean (Range)	SEL, dB Mean (Range)
<u>ALPHA</u> : Summit Drive	1450-1550	5	71.0 (70-72)	79.6 (79-80)
	1900-2000	5	70.5 (68-73)	79.6 (78-81)
<u>BRAVO</u> : Vollmer Road, 1/3 mile north of Swan Road	800-1000	5	72.2 (69-76)	79.3 (77-82)
	1400-1450	5	68.9 (67-75)	77.0 (76-79)
<u>CHARLIE</u> : Intersection of Goodson and Ayers Roads	550-650	3	72.1 (70-74)	79.7 (78-81)
<u>DELTA</u> : 2951 Fuller Road	1300-1350	5	71.0 (70-73)	79.2 (79-80)
<u>ECHO</u> : Intersection of Woodmen and Mustang Roads	990-1090	5	72.4 (69-75)	80.8 (78-83)
<u>FOREST</u> : Baker Road, 100 yds east of Black Forest Road	700-800	5	74.5 (74-75)	81.9 (81-83)
	700-750	5	75.5 (74-77)	82.6 (82-84)
<u>GOLF</u> : Intersection of Arroyo Lane and Stapleton Road	860-1010	5	71.8 (70-72)	78.9 (78-79)
<u>HOTEL</u> : Basin Drive due east of the radio tower	900	5	75.3 (74-76)	82.1 (82-83)
	1900	5	70.0 (69-71)	78.4 (78-80)
<u>INDIA</u> : Intersection of Wellwood Square and Wellwood Drive	1100	5	73.9 (73-75)	81.2 (81-82)
	2100	5	70.1 (69-73)	78.2 (77-80)

Note: Measurement results at a sideline location indicate that SEL values at a distance of about 1,000 feet to the side would be 3 dB lower than those shown above.

Source: U.S. Air Force Academy

Based on the data presented in Table 4.5-3, noise level calculations were conducted to determine the 24-hour average noise level (DNL) resulting from the Proposed Action at each monitoring location. Table 4.5-4 is based upon the measured noise level data and certain assumptions about the frequency (see Table 2-4) and time of occurrence of flights under the Proposed Action. Of a total of 120 daily departures in summer, 30 are expected to occur along the East route, 20 would be along the Woodmen route, 40 would be to the Southeast, and the remaining 30 would be equally allocated to North and South routes. For the No-Action alternative, it is assumed that a maximum of nine flights per day could occur along each flight path. The proposed introductory flight training flights are expected to begin as early as 6:30 a.m. in the summer. In the 30 minutes of nighttime, between 6:30 and 7:00 a.m., a worst-case assumption of 12 flights has been made. The same flight track allocation assumption has been used for these nighttime flights. Additionally, all arrivals from the east converge on the same area, about one-third of a mile west of the Black Forest Glider Port. This means that during a summer day, there could be up to 90 daytime arrivals over this area.

TABLE 4.5-4
Comparison of No Action and Proposed Action AFA Aircraft Noise Exposure

Monitoring Site	Altitude, Ft. AGL	Day-Night Average Noise Level (DNL), dB					All 120 Flights Over One Location (Hypothetical)
		No Action (9 flights)	Current East (3 Nighttime and 27 Daytime)	Woodmen (2 Nighttime and 18 Daytime)	Arrivals from East (90 Flights)	Altered East (3 Nighttime and 27 Daytime)	
ALPHA	1450-1550	43	48				54
	1900-2000	43	48				54
BRAVO	800-1000	42	47				54
	1400-1450	40	45				51
CHARLIE	550-650	43			47		54
DELTA	1300-1350	42		46			53
ECHO	990-1090	44		47			55
FOREST	700-800	45			52		56
	700-750	46			53		57
GOLF	860-1010	42			46		53
HOTEL	900	45				50	56
	1900	42				47	53
INDIA	1100	44				49	55
	2100	42				46	52

Source: CH2M HILL

Based on daily schedule the Academy expects to fly for the Introductory Flight Training, there would be ten overlapping two hour periods between sunrise and sunset (flights beginning around 6:30 a.m. and ending around 5:30 p.m.). For the purpose of evaluating the potential for single-event noise interference with the local residents' activities, it is assumed that, at worst case, up to 18 flights could occur over one location. Such a location would likely be one under the East arrival path. The L_{eq} during this peak flight hour would be

about 59 dB. For 6 minutes of the hour (10 percent of time), noise from the aircraft could interfere with speech in outdoor areas. (See Appendix E.)

Normal residential construction with windows open typically results in a nominal 15 dB reduction in noise levels within interior of homes. Therefore, SEL values of 64-69 dB and maximum noise levels of up to about 62 dB could be expected within the interior of homes located along the proposed flight paths. Such levels mean there would be minimal speech interference inside residences due to project-related flight activities. Furthermore, about 5 percent of the population within the affected area may be expected to be awakened by noise generated by Introductory Flight Training flights if they occur during sleeping hours.

4.5.2.2.3 Impact of No-Action Alternative

If no action is taken, aircraft noise exposure in the vicinity of the airfield would remain the same as that experienced under existing conditions. Aircraft flight operations at the airfield would continue at the same levels. Therefore, no increase in noise impacts would occur. Academy aircraft noise levels experienced at residential locations within the Black Forest area, east of the airfield, would be a DNL of about 42-46 dB.

4.5.2.2.4 Impact of Departure and Arrival Routes

The DNL resulting from the Proposed Action would be in compliance with the Air Force noise compatibility criterion of DNL 65 dB at all residential locations. This is also in compliance with the criteria of other agencies, such as FAA and HUD. This compliance would occur under the worst-case, and highly improbable, scenario of 120 flights over a single site (See Table 4.5-4.). If, as expected, aircraft flights are allocated to the various routes as shown in Table 2-4, the Proposed Action would also meet the EPA's more stringent DNL 55 dB guideline. Increases in aircraft DNL at some noise-sensitive locations would be noticeable; however, because the overall magnitude of noise exposure would likely be below DNL 55 dB, such increases would not be considered significant.

Single-event noise levels resulting from the Proposed Action would likely be similar to those experienced at the noise-sensitive locations today. However, there will be an increase in the frequency of occurrence of such events throughout the 24-hour period. The exterior areas of some residential locations would be exposed to noise levels that could interfere with speech communication for 30 minutes in a 24-hour period. The potential for indoor speech interference is minimal.

4.5.2.2.5 Impact of Altered East Departure (Preferred) Alternative

Aircraft noise exposure under the Preferred Alternative would be similar to that under the above project alternative. That is, noise generated under this alternative would be in compliance with the criterion. However, the aircraft using the Altered East departure route have a better opportunity to fly at an altitude about 1,000 feet higher than those flying the current East departure route. This difference in flight altitudes would result in 5 dB lower L_{max} levels, about 3 dB lower SEL and 3dB lower DNL levels on the ground. Furthermore, aircraft using the Altered East route would fly over fewer housing developments. In summary, the Altered East departure should cause less noise impacts than the current East departure.

4.5.3 Noise Mitigation

Although the proposed Introductory Flight Training program will not violate noise standards or exceed accepted noise criteria, the Academy is sensitive to the noise issues brought forward by the public and has discussed numerous operational ideas and mitigation techniques. Section 2.6 discussed the retained mitigation ideas, which include the altering of the East departure route, increased use of the Southeast departure route, an increase in the altitude of the aircraft, and a reduction of some early morning departures.

4.6 Water Resources

4.6.1 Issues and Concerns

Issues and concerns pertaining to water resources include the potential impact on water availability, use, and water quality within the Academy.

4.6.2 Analysis Methodology

An analysis of impacts to water resources would identify nearby surface water bodies and the potential of impacting groundwater.

4.6.3 Impact Assessment

4.6.3.1 Proposed Action

Under the Proposed Action, no adverse direct or indirect effect on groundwater would occur because the Proposed Action would not disturb groundwater or surface water. There are no construction activities associated with the Proposed Action. Additionally, the Proposed Action would not use significant amounts of water in the operations. There would be no depletion of water resources as a result of the Proposed Action.

4.6.3.2 No-Action Alternative

Under the No-Action alternative, no adverse direct or indirect effects on groundwater would occur because no clearing, grading, or subsurface-disturbing activities would occur.

4.7 Geology and Landform

4.7.1 Issues and Concerns

The primary issues to the geology, land form and soils resource area associated with impact assessment is the possibility of soil erosion due to construction.

4.7.2 Analysis Methodology

Analysis of impacts to geology and landforms includes an assessment as to whether the Proposed Action would degrade or destroy any forms of geology or landform.

4.7.3 Impact Assessment

4.7.3.1 Proposed Action

The Proposed Action would not disturb or change topography soils or geology. Therefore, no impacts would occur as a result of the Proposed Action.

4.7.3.2 No-Action Alternative

Under the No-Action alternative, no impacts to topography soils or geology would occur because no grading or other earth disturbing activities would occur.

4.8 Vegetation

4.8.1 Issues and Concerns

The primary issue and concern regarding vegetation is the potential disturbance to vegetation species as a result of a Proposed Action.

4.8.2 Analysis Methodology

Potential impacts to vegetation would generally result from ground disturbance and associated habitat alteration.

4.8.3 Impact Assessment

4.8.3.1 Proposed Action

Under the Proposed Action, no new construction would occur; therefore no impacts to vegetation are expected. An increased number of sorties would occur as a result of the Proposed Action, but no impact to vegetation from this overhead activity would be expected. The existing runways will continue to be utilized.

4.8.3.2 No-Action Alternative

The No-Action alternative would not impact vegetation since the runways already exist and no new construction is planned.

4.9 Wildlife

4.9.1 Issue and Concerns

The primary issues and concerns resulting from the Proposed Action in regard to wildlife is the potential disturbance to general wildlife, or threatened, endangered, or sensitive species, as well as bird species. Animals present at the Academy that could potentially be affected by aircraft include a variety of birds and other small mammal species. Potential adverse impacts to wildlife from aircraft overflight could include: startle responses which increase heart rate and deplete energy reserves; potential bird-aircraft collisions; and temporary hearing impairment. Additionally, overflights could cause birds to temporarily leave their nests, thereby increasing the chance of predation and egg chilling or overheating.

4.9.2 Analysis Methodology

Impacts were assessed by identifying the types and location of known wildlife species in the area. A source of potential impact to wildlife is bird-aircraft strikes or noise impacts from flight operations.

4.9.3 Impact Assessment

4.9.3.1 Proposed Action

The Academy airfield has been very active for many years. Animal species likely to be affected by aircraft likely have adapted or moved away over time. Although the number of flight operations with the Proposed Action will increase significantly, the increase is not significant when compared to the total number of flights operations at the Academy. The total annual number of flight operations at the Academy in 1999 was approximately 230,000. Therefore, the impact to wildlife is expected to be negligible.

Bird strikes have not been identified by Academy personnel as being a significant concern. No data is available which would indicate a clear distribution pattern of bird strikes sufficient to ascribe any incidents to any specific bird concentration area. Bird strikes pose the greatest hazard to aircraft at altitudes less than 500 feet AGL, placing the greatest potential for hazard on the Academy grounds.

4.9.3.2 No-Action Alternative

The No-Action alternative will have no additional impact on wildlife in the area, since there would be no change in the number of operations or aircraft.

4.10 Aquatic Systems

4.10.1 Issues and Concerns

The primary issue and concern regarding aquatic systems is the potential disturbance to aquatic species as a result of the Proposed Action.

4.10.2 Analysis Methodology

Potential impacts to aquatic systems would generally result from ground disturbance and erosion or from hazardous waste contamination to stream systems.

4.10.3 Impact Assessment

4.10.3.1 Proposed Action

Under the Proposed Action, no new construction would occur, and no hazardous incidents into stream systems are likely since the stream and surface water is not near the airfield. There would be no impact to aquatic systems as a result of the Proposed Action.

4.10.3.2 No-Action Alternative

The No-Action alternative would have no impact on aquatic systems since there is no surface water and no aquatic systems near the airfield.

4.11 Wetlands

4.11.1 Issues and Concerns

The primary issue and concern in regard to wetlands is the potential disturbance to or destruction of wetlands as a result of a Proposed Action.

4.11.2 Analysis Methodology

Potential impacts to wetlands would generally result from ground disturbance or from hazardous waste contamination.

4.11.3 Impact Assessment

4.11.3.1 Proposed Action

Under the Proposed Action, no new construction would occur. Additionally, there are no wetlands near the airfield. There would be no impacts to wetlands as a result of the Proposed Action.

4.11.3.2 No-Action Alternative

The No-Action alternative would have no impact on wetland systems at the Academy.

4.12 Cultural Resources

4.12.1 Issues and Concerns

Only those archaeological and architectural resources determined to be significant under cultural resource legislation are subject to protection or consideration by a federal agency. Significant cultural resources, either prehistoric or historic in age, are referred to as historic properties.

A project affects a historic property when it alters the property's characteristics, including relevant features of its environment or use, that qualify it as significant according to National Register criteria.

4.12.2 Analysis Methodology

Potential impacts are assessed by: (1) identifying project activities that could directly or indirectly affect historic properties (2) identifying the known or expected historic properties in areas of potential impact; and (3) determining whether a project activity would have no effect, no adverse effect, or an adverse effect on historic properties (36 CFR 800.9).

Direct impacts to archaeological sites are usually those associated with ground disturbance, such as disturbance from grading, trenching, filling, and clearing. Architectural resources may be impacted by these activities as well as by activities that destroy or modify the structure itself.

There is also some concern that vibrations from low-flying aircraft may potentially disturb cultural resources. However, studies have shown that damage due to aircraft noise is not likely to occur more than 150 feet from the aircraft, and only for high-performance aircraft.

4.12.3 Impact Assessment

4.12.3.1 Proposed Action

There are historic structures on the Academy, but none of these structures will be subject to noise impacts where none existed before. Because there is no construction involved with the Proposed Action, there will be no impacts to buried archeological sites.

4.12.3.2 No-Action Alternative

Under the No-Action alternative, there would be no impact to cultural resources.

4.13 Socioeconomics

4.13.1 Issues and Concerns

The primary issue and concern related to socioeconomic resources is the stress caused by changes to the existing balance between demographics, markets, and public services. Population changes serve as the primary cause of stress to housing markets, employment rates, and public services. Stress to socioeconomic areas affect quality of life, housing affordability, access to public services (police, fire, and utilities), and employment.

4.13.2 Analysis Methodology

Impacts to socioeconomic issue areas are identified by determining if and how potential changes to the local population affect housing and employment markets or public services. The significance of these impacts is determined according to how the impacts are absorbed; that is, how ably the markets can absorb the impacts or how well public services can continue to be provided given changes to the population.

4.13.3 Impact Assessment

4.13.3.1 Proposed Action

Population. The population of El Paso County and Colorado Springs is not expected to increase as a result of the Proposed Action. A contractor will be selected to run the Introductory Flight Training program, with a staff of approximately 80 employees. It is not known whether these employees would be from the local job pool or from outside the area, however, the number is insignificant to the regional population. No substantial increases in population result when comparing the Proposed Action with historical changes in population of the surrounding area.

Employment. No significant employment impacts are expected as a result of this Proposed Action. Although approximately 80 jobs will be created by the contractor for the Introductory Flight Training program, a similar number of jobs could be lost from the local fixed base operators (FBOs) who are currently training the Academy students. The net balance will approach zero.

Housing. The housing market in both El Paso County and Colorado Springs is not expected to experience any changes as a result of this action. The market is expected to readily accept any increases in housing demand caused by the Proposed Action. Additionally, under the Proposed Action, additional housing will be created at the Academy through the conversion of one of the Airmen's dorms into housing for lieutenants in Introductory Flight Training.

Fire/Police. No impacts to fire safety or police security are expected as a result of this action.

4.13.3.2 No-Action Alternative

Under the No-Action alternative, pilot candidates would continue to receive training at local pilot training schools. As a result, employment numbers at the local schools would likely remain constant.

4.14 Environmental Justice and Protection of Children

4.14.1 Issues and Concerns

EO 12898 was designed to discourage federal actions from adversely or intentionally impacting low income or minority populations. EO 13045 was designed to ensure that children are protected from environmental health and safety risks.

4.14.2 Analysis Methodology

Assessing impacts to disadvantaged groups entails locating known groups to determine if a Proposed Action will adversely impact such a group.

4.14.3 Impact Assessment

4.14.3.1 Proposed Action

There are no disadvantaged groups located at the Academy or adjacent to the Academy. Low income census tracts are generally found along I-25, close to the downtown Colorado Springs area. The south departure flights may cross some of those census tracts, however, the majority of the flight paths do not cross disadvantaged areas and travel to the east. Additionally, all of these flight routes have been used by previous introductory flight training programs. Furthermore, the Proposed Action does not pose a health risk to children. No disproportionately high and adverse effects result from this program on minority or low- income populations of all ages.

4.14.3.2 No-Action Alternative

Under the No-Action alternative, there would be no change in the number of aircraft, and there would be no adverse impact to disadvantaged groups or to children.

4.15 Infrastructure

4.15.1 Issues and Concerns

Issues and concerns regarding infrastructure are related to a Proposed Action creating stress on infrastructure systems, such that the existing infrastructure must be updated or changed.

4.15.2 Analysis Methodology

Assessing impact to infrastructure entails a determination of infrastructure that will be used as a result of the Proposed Action.

4.15.3 Impact Assessment

4.15.3.1 Proposed Action

Under the Proposed Action, no additional infrastructure would be needed. The Academy has sufficient runways and taxiways to accommodate the increased aircraft. No additional wastewater or water services would be needed. Ground transportation facilities and roadways are adequate to handle the increased numbers of flight students arriving at the Academy airfield.

4.15.3.2 No-Action Alternative

Under the No-Action alternative, there would be no impact to existing infrastructure at the Academy.

4.16 Hazardous Waste and Toxic Materials

4.16.1 Issues and Concerns

The Proposed Actions raise the issue and concern for the potential generation of additional hazardous materials and wastes due to additional operations at the Academy.

4.16.2 Analysis Methodology

The methodological approach taken in the analysis of impacts related to hazardous materials is: (1) to identify how additional activities may influence or affect hazardous materials generation or management; and (2) to assess impacts of these activities using reference laws pertaining to hazardous materials management.

4.16.3 Hazardous Materials

4.16.3.1 Proposed Action

Under the Proposed Action, the chosen Introductory Flight Training contractor may store small quantities of hazardous materials, such as cleaning solutions, oils, and greases. The contractor will be required to prepare and adhere to hazardous materials management plans that conform to all local, state, and federal laws and regulations, including Air Force regulations. Secondary containment will be provided as required by regulations for all hazardous materials used and stored on the site. All bulk fuel will be stored on-site at the

airfield tank farm as it currently is. This contractor-run facility will maintain the fuel and dispense it as needed.

4.16.3.2 No-Action Alternative

Under the No-Action alternative, no impacts to hazardous materials management or the quantities and types of hazardous materials used on the base would occur because no new activities would occur on the airfield.

Aboveground Storage Tanks (ASTs) and Underground Storage Tanks (USTs)

All Alternatives. None of the alternatives will have any adverse direct or indirect effects on ASTs or USTs as the level of use will not exceed previous levels.

Asbestos Management

All Alternatives. None of the alternatives will have any adverse direct or indirect effects on asbestos management because no building demolition or renovation will occur.

Lead and Heavy Metal Coatings Management

All Alternatives. None of the alternatives will be adversely affected by lead-based paint or other heavy metal coatings because no building demolition or renovation would occur. Any paint used in aircraft maintenance would be approved for use through the Academy.

Polychlorinated Biphenyls

All Alternatives. None of the alternatives will have any adverse direct or indirect effects on PCBs because there are no sources of PCBs on the site and no new sources would be constructed on the site.

Pesticides

All Alternatives. Under all alternatives, there would be no impacts to pesticide use because the new program will not create an increased demand for pest control.

Radon

All Alternatives. None of the alternatives will be adversely affected either directly or indirectly by radon because there is no action that would impact radon.

Ordinance and Safety Zones

All Alternatives. Under all alternatives, no impacts on ordinance storage and use or safety zones would occur because no changes in existing activities would occur.

4.16.4 Contaminated Sites

4.16.4. 1 Proposed Action

Under the Proposed Action, there would be no effects on or from contaminated sites because there are no sites near the airfield. All of the users of the airfield would also be required to comply with all local, state, and federal laws and regulations, including Air Force regulations, guidance, and instructions, that apply to the use, storage, handling, and

disposal of hazardous materials and wastes. This will minimize the potential for future contamination at the airfield.

4.16.4.2 No-Action Alternative

No impact to existing contaminated sites would occur under the No-Action alternative because no new construction or activities would occur. In addition, no adverse effects on known contaminated sites would occur because no new activities near the site would occur.

4.17 Unavoidable Adverse Environmental Impacts

The majority of impacts associated with the Proposed Action are negligible, since this is not a new program and there will be no new construction. The impact with the greatest adverse potential is associated with the increased number of flights that will be heard or seen directly above residential areas. The Academy has a primary role in developing new pilots for the defense of the United States. Although there is noise associated with aircraft, the pilot candidates must be trained. The Academy has conducted flight training for over 30 years in the areas surrounding the Academy. With an increase in the population and sprawl of Colorado Springs, noise and visual impacts from Academy aircraft are unavoidable.

4.18 Compatibility of the Proposed Action with the Objectives of Federal, Regional, State, and Local Use Plans, Policies, and Controls

The Proposed Action is compatible with the objectives of federal, regional, state, and local use plans, policies, and controls. There are no regional policies that would affect implementation of the Proposed Action.

4.19 Relationship between Short-Term Use of the Environment and Long-Term Productivity

4.19.1 Proposed Action

Implementation of the Proposed Action would not create short-term impacts as with projects that involve construction. The impacts of the Proposed Action will be immediate and long-term, but would not result in long-term risks to the environment or surrounding ecosystems. The Proposed Action will also result in a long-term solution for the Academy in terms of the mission objective to train new pilot candidates.

4.19.2 No-Action Alternative

Under the No-Action alternative, the Academy would not be able to maintain their long-term plan for an Introductory Flight Training program located at the Academy. In the short-term, training would continue at off-base flight schools.

4.20 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of those resources will have on future generations. Irreversible effects primarily result from the destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species).

The No-Action alternative will result in irreversible or irretrievable commitments of financial resources to train students at local pilot training schools, as well as an irreversible use of labor, materials, and energy resources. The Proposed Action would also involve the irretrievable loss of fiscal resources, as well as an irreversible use of labor, materials, and energy resources. These resources would not curtail the range of beneficial uses of the environment.

4.21 Cumulative Impacts

Cumulative impacts are impacts that when combined with the known impacts from another project, create a larger or more significant impact. The Proposed Action does not change the environment or create any significant direct or indirect adverse impacts. Therefore, no cumulative impacts would occur with other projects that might take place now or in the future. This result is also due to the fact that impacts of other unknown projects at the Academy are also minor, temporary, or can be fully mitigated and are restricted to the local, already manmade environs outside the vicinity of the airfield. No other projects have been identified to take place within the foreseeable future timeframe or in the vicinity of the Proposed Action. For these reasons, no instances of the Proposed Action causing adverse cumulative impacts in conjunction with other projects are found.

In terms of other aircraft in the area, the Colorado Springs airport has a significant number of daily flights in the region as does Peterson Air Force Base. Additionally, there are numerous local pilot training schools in the area, including those at Meadow Lake, an uncontrolled airfield with numerous daily flights. While the proposed Introductory Flight Training program would increase the number of flights originating from the Academy over the existing number, it is instructive to note that many of the Introductory Flight Training flights are currently being conducted from local flight training schools at the Meadow Lake airfield and the Colorado Springs airport. The proposed flights from the Academy will not significantly or cumulatively change the number of flights in the regional area.

5.0 List of Preparers

Anita Allen—CH2M HILL. Environmental Scientist participating in the development of information for the EA including the description of the Proposed Action. Ms. Allen has 12 years of experience in NEPA, permitting, biological inventories, and natural resource planning. She has a BS degree in zoology from Virginia Tech and is a Ph.D. candidate in environmental science and policy at George Mason University.

Lieutenant Colonel Kathy Doby—United States Air Force Academy. Lieutenant Colonel Doby is a pilot and the Operations Officer with the 557 Flying Training Squadron. She evaluated the flight aspects of the alternatives, coordinated with Colorado Springs Approach, and helped edit the final document. She has a BS in Behavioral Science from the Air Force Academy and a MS in Aeronautical Science from Embry Riddle.

Farshad Farhang—CH2M HILL. Senior Acoustics Engineer responsible for noise investigations. Mr. Farhang has more than 13 years of experience in the field of acoustics. He specializes in analysis and control of noise from transportation sources, including fixed- and rotary-wing aircraft, traffic, and railroad. Mr. Farhang has prepared numerous noise technical reports, noise sections of EAs and AICUZ reports prepared for DoD. He holds an MBA and a BS degree in electrical engineering from California State University.

Tricia Jones—CH2M HILL. Project Manager for the IFT EA. Ms. Jones has 16 years of experience preparing and managing a variety of environmental planning documents, largely under the NEPA statute. Additionally, Ms. Jones has managed numerous environmental projects for the AFA while at CH2M HILL. Ms. Jones has a BS in agricultural economics and a MS in environmental policy & management.

Major John Putnam—United States Air Force Academy. Major Putnam is an Associate Professor in the Academy's Department of Biology. He oversaw the data collection for the supplemental noise study, and provided review of final EA. Major Putnam has a BS, MS, and PhD in Entomology.

Frank Turina—CH2M HILL. Mr. Turina is an environmental planner with experience in sustainable development, regulatory and policy analysis, environmental permitting, field investigations and public records reviews, litigation support, legal research, and environmental information systems. His project experience includes analysis of environmental permitting requirements, NEPA, and sustainable development program and project management.

Dick Veazey—CH2M HILL. Mr. Veazey has over 36 years of experience in the management of numerous airport studies of airfield and terminal facilities, including ground access and financial analyses. He has had a broad involvement in airport environmental studies, statement of work preparation, and noise analyses. He has been instrumental in the preparation of airfield and airspace analyses including low-visibility studies, airfield geometry and layouts, and aircraft parking and maneuvering. Mr. Veazey has extensive coordination experience at all levels with the FAA.

Lieutenant Keith Waltz—United States Air Force Academy. Lieutenant Waltz is the project manager for the IFT EA. Lieutenant Waltz has over 3 years of project management experience in construction and environmental fields. He has been involved in numerous Air Force airfield projects in Colorado and overseas, as well as 3 years of flying experience at the USAFA airfield. He obtained a BS in Civil Engineering from the Air Force Academy.

6.0 List of Persons and Agencies Consulted

Mr. LeRoy Carlson
US Fish and Wildlife Service

Ms. Julie Farrell
The Nature Conservancy

Ms. Elizabeth Hacker
El Paso County Planning Department

James Hartmann
State Historic Preservation Office

Ed LaRock
Colorado Department of Public Health and Environment

Ms. Trina Lynch
Colorado Division of Wildlife

Ms. Holly Managers
Colorado Department of Public Health and Environment

Mr. Robert Meehan
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Mr. Rich Muzzy
Pikes Peak Area, Council of Governments

Mr. Quinn Peitz
City Planning Office, City of Colorado Springs

Ms. Amy Phillips
Black Forest Land Use Committee

Bruce Rosenlund
Colorado FWAO, U.S. Fish and Wildlife Services

Mr. Randy Swepson
El Paso County Department of Health and Environment

Ms. Dianne Thiel
EPA Region 8

Mr. Alan Weichmann, Manager
Denver Airports District Office
Federal Aviation Administration

Mr. Rick Gorman
City of Colorado Springs Airport

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Applicable Regulations and Policies

Environmental Policy

The National Environmental Policy Act of 1969 (NEPA) and Title 40 of the Code of Federal Regulations (40 CFR 1500-1508) require federal agencies to consider the potential environmental consequences of proposed actions and alternatives.

Department of Defense (DoD) Directive 6050.1 (32 CFR 214) provides DoD policies and procedures to supplement 40 CFR 1500-1508.

Air Force Instruction (AFI) 32-7061 describes specific tasks and procedures for complying with NEPA through the environmental impact analysis process (EIAP), including responsibilities, compliance requirements, and document preparation and processing.

Executive Order (EO) 11514, Protection and Enhancement of Environmental Quality (amended by EO 11991), provides policy directing the federal government to take leadership in protecting and enhancing the environment.

Biological Resources (Vegetation and Habitat, Wildlife, and Threatened and Endangered Species)

The Endangered Species Act of 1973 (16 U.S. Code [USC] 1531-1543) provides policy for federal agencies (with assistance of the Secretary of the Interior/Commerce) to ensure that their actions do not jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of habitat of such species that is determined to be critical.

The Fish and Wildlife Coordination Act provides policy for the Secretary of the Interior (through the U.S. Fish and Wildlife Service [USFWS]) and for the National Marine Fisheries Service (NMFS) (through the Secretary of Commerce) to assist and cooperate with federal, state, and public or private agencies and organizations in the conservation and rehabilitation of wildlife.

The Migratory Bird Treaty Act (16 USC 701, et seq.) provides for the protection of migratory birds. It forbids, among other things, the taking, import, possession, purchase or selling of migratory birds, with the exception of government sanctioned hunting and capture of birds. Although recent court rulings have resulted in the USFWS ceasing to issue permits to other federal agencies for incidental takings of migratory birds, the USFWS is developing an EO that would clarify the responsibilities of federal agencies with regard to the taking of migratory birds. The Air Force has issued interim guidance for complying with the Migratory Bird Treaty Act (Memorandum dated September 12, 1997) effective until the EO is issued. The guidance requires the evaluation of non-lethal control measures, consultation with the USFWS regarding potential protected species issues, compliance with treaties,

consultation with appropriate state agencies, proper oversight of contractors and volunteers, and compliance with NEPA.

The Sikes Act of 1960 (16 USC 670 et seq.), Conservation Programs on Military Reservations is the principal legislation governing the management of natural resources on military lands. It requires coordination with the State fish and game agency as well as with the USFWS.

Department of Defense 4715.3, Environmental Conservation Program, implements policy, assigns responsibilities, and prescribes procedures under reference for the integrated management of natural and cultural resources on property under DoD control.

AFI 32-7064, *Integrated Natural Resource Management*, provides guidance to the Air Force on compliance with the Endangered Species Act as well as other federal, state, and local environmental regulations.

The Nongame, Endangered, or Threatened Species Conservation Act (Colorado Revised Statutes [CRS] 33-2-101 et seq.) provides the protection mechanisms for formally listed protected species in the state. It also provides the permit requirements for takings of listed species.

Wetlands

The Clean Water Act (CWA) of 1977 and the Water Quality Act (WQA) of 1987 (33 USC 1251 et seq., as amended) provide policy for protecting wetlands and other waters of the United States. Section 404 of the CWA requires permits from the U.S. Army Corps of Engineers (USACE) to discharge dredged or fill material into such systems.

EO 11990, Protection of Wetlands, requires federal agencies to minimize or avoid adverse impacts to wetlands and to preserve and enhance their beneficial values.

AFI 32-7061 requires EAs prepared for actions for which the Air Force has wetlands compliance responsibilities to go through Headquarters Civil Engineering, Compliance to Secretary of the Air Force/Environmental Security (HQ CEV to SAF/MIQ) for approval.

Land Use

EO 12372, Intergovernmental Review of Federal Programs, directs federal agencies to consult with and solicit concerns and comments from state and local governments that have jurisdiction over an area within which a federal action is proposed the Farmland Protection Act of 1981 (7 USC 4201 et. seq., as amended) requires federal agencies to consult with the Natural Resources Conservation Service (NRCS) to ensure that preservation/conservation of important farmlands is considered in federal actions.

Hazardous Substances

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (as amended by the Superfund Amendments and Reauthorization Act [SARA] of

1986) provides for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment and cleanup of inactive hazardous substance disposal sites.

The Resource Conservation and Recovery Act (RCRA) of 1976 provides policy for proper disposal of solid waste and establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous wastes.

The Toxic Substance Control Act (TSCA) provides policy for proper handling of polychlorinated biphenyls (PCBs), asbestos, radon, and lead-based paint. State and local regulations should be consulted when engaging in activities that involve these substances on civil works projects or properties.

AFI 32-7042, *Solid and Hazardous Waste Compliance*, is the Air Force guidance on compliance with RCRA and other similar federal, state, and local laws and regulations.

AFI 32-7020, *Environmental Restoration Program*, is the Air Force guidance on compliance with CERCLA and other similar federal, state, and local laws and regulations.

The Colorado Department of Public Health and Environment (CDPHE) Hazardous Materials & Waste Management Division establish programs and requirements for the management, generation, storage, transportation, treatment, and disposal of solid (30 CRS 20 et seq.) and hazardous wastes (30 CRS 15 et seq.) in Colorado.

Cultural Resources

The National Historic Preservation Act (NHPA) of 1966 (16 USC 470 et seq., as amended) provides policy for the protection of historic resources from federal actions. Protection of Historic Properties (36 CFR 800) provides specific procedures that federal agencies must implement, such as consulting with the State Historic Preservation Officer (SHPO), to ensure compliance with the NHPA.

The Archeological Resources Protection Act of 1979 requires federal agencies to conduct archaeological investigations on lands under their jurisdiction to determine the nature and extent of the protected cultural resources present, and to help manage extant resources in accordance with permit and enforcement provisions of the Act.

AFI 32-7065, *Cultural Resources Management*, is the Air Force guidance on compliance with the NHPA, ARPA, and other applicable federal, state, and local laws and regulations.

Water Resources

The CWA of 1977 and the WQA of 1987 provide federal policy on maintaining and restoring water quality to protect and enhance Waters of the United States. Section 404 of the CWA requires permits from the USACE to discharge dredged or fill material into Waters of the United States.

EO 11988, Floodplain Management, provides federal policy for reducing flood damage risk, minimizing the impacts of floods potentially resulting from a federal action, and preserving the natural and beneficial values provided by floodplains/floodways.

AFI 32-7061 requires HQ CEV to SAF/MIQ approval on EAs prepared for actions for which the Air Force has floodplain compliance responsibilities.

AFI 32-7041, *Water Quality Compliance*, is the Air Force guidance on assessment, attainment, and maintenance of compliance with the CWA and other federal, state, and local laws and regulations that apply to surface water.

The Colorado Water Quality Control Act and the Colorado Department of Public Health and Environmental Water Quality Control Commission Regulation No. 41 – The Basic Standards For Groundwater – establish classifications, protective measures, and standards for groundwater to ensure public health. The Colorado Water Quality Control Act also set forth surface water quality criteria and permitting requirements.

Air Quality

The Clean Air Act (CAA) (42 USC 7401 et seq., as amended) provides policy directing federal agencies to protect and enhance air quality. The CAA also requires agencies to verify that proposed actions conform to state implementation plans for attaining air quality goals.

The Colorado Ambient Air Quality Standards define criteria pollutants (particulates, sulfur oxides, carbon monoxide (CO), nitrogen dioxide, ozone, and lead) and discuss their measurement.

The Colorado Air Quality Control Commission (CAQCC) Regulations set forth air permitting requirements in the state.

Noise

The Noise Control Act of 1972 provides policy that directs federal agencies to limit noise emissions to within compliance levels.

AFI 32-7063, *Air Installation Compatible Use Zone (AICUZ) Program*, is the Air Force guidance on compliance with applicable federal, state, and local noise regulations. The AICUZ program establishes the basic objective of achieving compatible uses of public and private lands in the vicinity of military airfields by restricting incompatible development based on noise and safety factors.

Social

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, provides policy directing federal agencies to evaluate the effects of proposed actions on minority communities and low-income communities. Effects to be evaluated include human health, social, environmental, and economic.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, provides policy directing federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children.

Installation Agreements

The following list contains existing cooperative agreements among the DoD and other agencies and organizations:

Cooperative Agreements Among the Department of Defense and Other Agencies and Organizations

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| 1988 | “Joint Agreement of Cooperation to Perpetuate North American Waterfowl Populations”—with the USFWS |
| 1988 | “Cooperative Agreement between the Department of Defense and The Nature Conservancy” |
| 1990 | “Memorandum of Agreement for the Conduct of Forest Insect and Disease Suppression on Lands Administered by the U.S. Department of Defense”—with the U.S. Department of Agriculture (USDA) |
| 1990 | “National Watchable Wildlife Memorandum of Understanding” |
| 1991 | “Memorandum of Agreement for the Creation of the Federal Neotropical Migratory Bird Conservation Committee”—with the USFWS, U.S. Forest Service, Bureau of Land Management, National Parks Service, Agency for International Development, EPA, U.S. Department of the Navy, and the Air Force |
| 1992 | “Interagency Agreement for Professional and Technical Assistance in Managing and Protecting Cultural Resources”—with the National Park Service |
| 1992 | “Interagency Agreement for Professional and Technical Assistance in Delineating and Mapping Wetlands”—with USFWS |
| 1993 | “Memorandum of Agreement with the National Trust for Historic Preservation” |
| 1993 | “Interagency Agreement for Cooperative Actions and Technical Assistance in Wildlife, Waterfowl, and Wetlands Management”—with USFWS |
| 1994 | “Memorandum of Understanding to Establish and Describe a Federal Native Plant Conservation Committee”—with the Bureau of Land Management, the National Biological Survey, the National Park Service, the USDA Agricultural Research Service, the USDA Forest Service, the USDA Soil Conservation Service, and the USFWS. The committee will identify priority conservation needs for native plants and their habitats and coordinate implementation of a program for addressing those needs |

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- 1994 “Endangered Species Memorandum of Understanding”—with the Bureau of Reclamation, the USFWS, the Bureau of Land Management, the Bureau of Mines, the Minerals Management Service, the FAA, the National Park Service, the U.S. Coast Guard, the National Marine Fisheries Service, the Federal Highway Administration, the EPA, the U.S. Forest Service, and the U.S. Army Corps of Engineers (USACE). The purpose is to facilitate compliance with the Endangered Species Act through a series of working groups in different geographical areas and a National Working Group
- 1995 “Memorandum of Agreement for Professional and Technical Assistance in Conducting Biological Surveys, Research, and Related Activities”—with the National Biological Service
- 1995 Cooperative Agreement between the Department of Defense and The Nature Conservancy. The purpose is to combine resources to provide effective and efficient protection and management of biodiversity within the context of the DoD’s environmental security and military missions
- 1995 “Memorandum of Understanding to Foster the Ecosystem Approach”—with 14 federal agencies including the DoD. The purpose is to foster a more consistent approach to ecosystem management among federal agencies, to enhance coordination, and to encourage more regional ecosystem initiatives

Cooperative Agreements Among the Air Force Academy and other Agencies and Organizations

- 1982 “Cooperative Agreement for Conservation and Development of Fish and Wildlife Resources at the U.S. Air Force Academy”—with the USFWS and the Colorado Division of Wildlife (reviewed and amended annually)
- 1984 “Interagency Agreement for Use of Saylor Park as a Cadet Training Area”—with the U.S. Forest Service
- 1984 “Cooperative Agreement for the Operation, Development, Management, and Protection of Outdoor Recreation Resources at the U.S. Air Force Academy”—with the National Park Service and the Colorado Division of Parks and Outdoor Recreation
- 1985 “Soil Conservation District Land Use Cooperative Agreement for Soil Surveys, Soil Erosion, Water Diversions, Utility Rights-of-way, and Grazing and Range Management”—with the U.S. Soil Conservation Service (now the U.S. Natural Resources Conservation Service)
- 1991 “Subagreement to the 1988 Cooperative Agreement for Biological Inventory, Identification of Ecologically Significant Areas, Technical Expertise, and Data Repository”—with the Colorado Nature Conservancy
- 1993 “Cooperative Agreement for Conservation and Development of Forest Resources at the U.S. Air Force Academy”—with the Colorado State Forest Service
- 1995 “Colorado Smoke Management Memorandum of Understanding and Plan”—with the Colorado Air Pollution Control Division, the Colorado State

Plan”—with the Colorado Air Pollution Control Division, the Colorado State Forest Service, the U.S. Forest Service, the Bureau of Land Management, the USFWS, and the National Park Service

- 1995 “Fountain Creek Watershed Project Memorandum of Understanding.” The objective of this cooperative agreement, which has over 200 signatories, is to develop a more comprehensive management strategy for the Fountain Creek watershed based on a shared vision for the future. The project strives to maintain and restore the ecological integrity of Fountain Creek and its tributaries by coordinating human activities to benefit natural resources and the human environment

FAA Controlled Airspace Definitions

An airspace of defined dimensions within which air traffic control service is provided to Instrument Flight Rules (IFR) flights and to Visual Flight Rules (VFR) flights in accordance with the airspace classification.

- a. Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.
- b. Controlled airspace is also that airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements in FAR Part 91 (for specific operating requirements, please refer to FAR Part 91). For IFR operations in any class of controlled airspace, a pilot must file an IFR flight plan and receive an appropriate Air Traffic Control (ATC) clearance. Each Class B, Class C, and Class D airspace area designated for an airport contains at least one primary airport around which the airspace is designated (for specific designations and descriptions of the airspace classes, please refer to FAR 71 [published in graphic form on Jeppesen Enroute charts]).
- c. Controlled airspace in the United States is designated as follows:
 1. CLASS A: Generally, that airspace from 18,000 feet mean sea level (MSL) up to and including FL600, including the airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska. Unless otherwise authorized, all persons must operate their aircraft under IFR.
 2. CLASS B: Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspaces areas resemble upside down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds."
 3. CLASS C: Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a surface area with a 5-nautical-mile (nm) radius, an outer circle with a 10-nm radius that extends from 1,200 feet to 4,000 feet above the airport elevation and an outer area. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter

maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace. (See Outer Area)

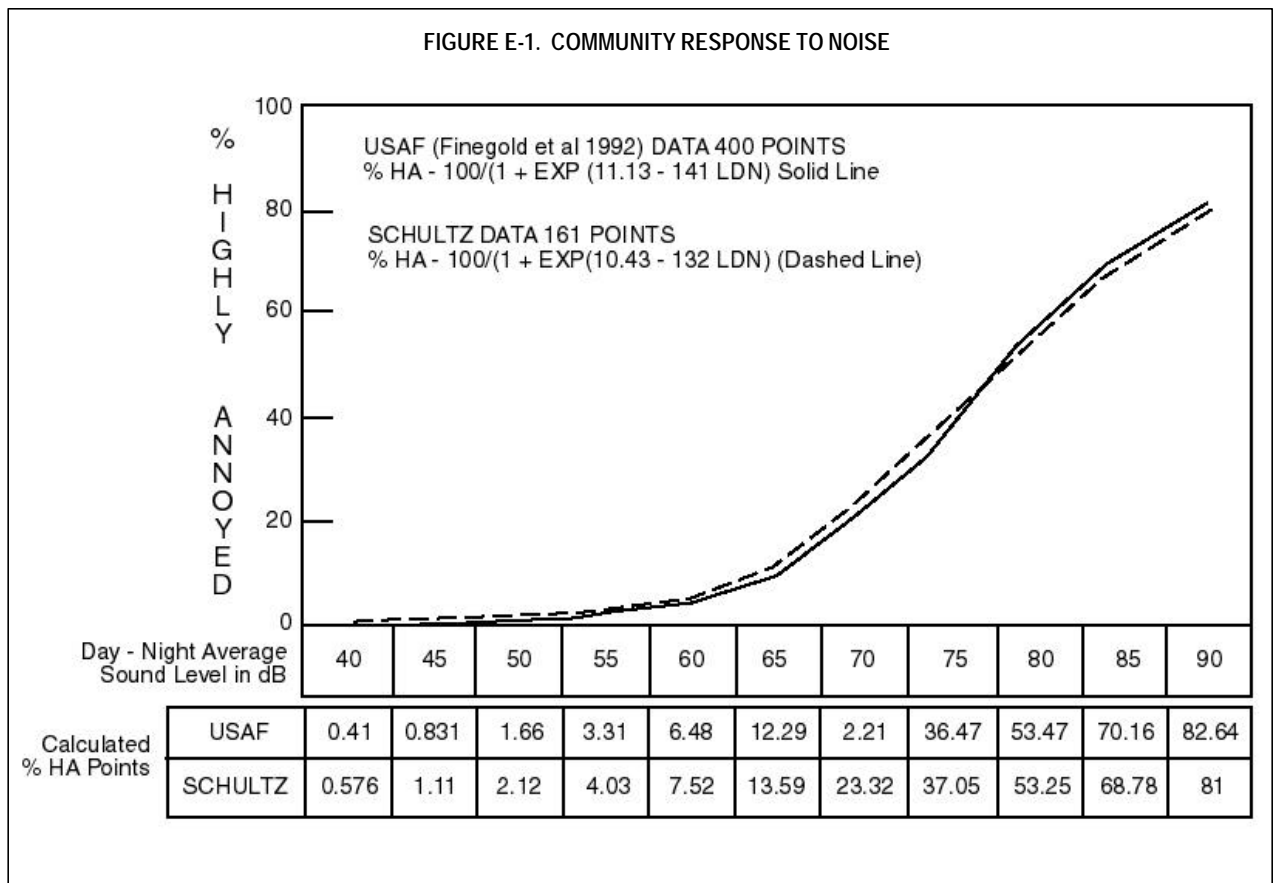
4. CLASS D: Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and, when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to VFR aircraft.
5. CLASS E: Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Also in this class are Federal airways, airspace beginning at either 700 or 1,200 feet above ground level (AGL) used to transition to/from the terminal or enroute environment, enroute domestic, and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 MSL over the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska, up to, but not including 18,000 feet MSL, and the airspace above FL 600.

Noise Effects

E.1 Annoyance

Studies of community annoyance from numerous types of environmental noise show that DNL (or L_{dn}) is the best measure of impact. Schultz (1978) showed a consistent relationship between DNL and annoyance. This relationship, referred to as the “Schultz curve,” has been reaffirmed and updated over the years (Fidell, 1991; Finegold, 1994). Figure E-1 shows the current version of the Schultz curve.

As previously stated, the U.S. EPA identified a DNL of 55 dB or less as the threshold below which adverse noise impacts are not expected (U.S. EPA, 1972). It can be seen from Figure 4-1 that this is a region where a small percentage of people is highly annoyed. DNL of 65 dB is widely accepted as a level above which significant adverse impact should be expected (FICON, 1992), and it is seen from Figure E-1 that about 15 percent of people are highly annoyed at that level.



Source: FICON, 1992.

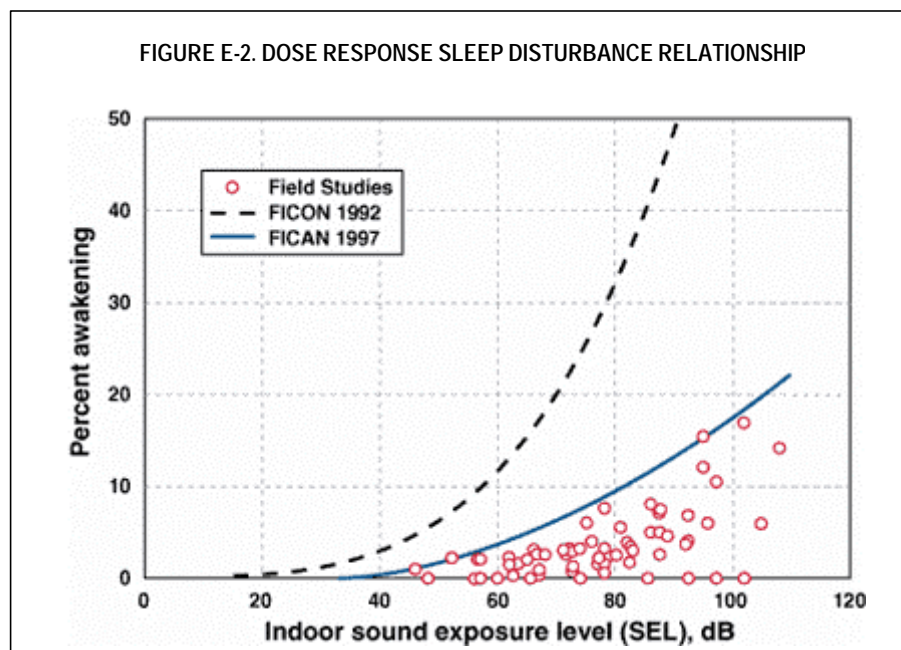
E.2 Speech Interference

Conversational speech is in the 60 to 65 dB range, and interference with this can occur when noise enters or exceeds this range. Speech interference is one of the primary causes of annoyance. The Schultz curve incorporates the aggregate effect of speech interference on noise impact.

E.3 Sleep Interference

Sleep interference is commonly believed to represent a significant noise impact. The 10-dB nighttime penalty in DNL is based primarily on sleep interference. Recent studies, however, show that sleep interference due to noise is much less than had been previously believed (Pearsons, 1989; Ollerhead, 1992).

The Federal Interagency Committee on Aviation Noise (FICAN) has evaluated the data and conclusions from a number of field studies related to sleep disturbance due to noise from aircraft events (FICAN, 1997). The “FICAN 1997” curve shown in Figure E-2 predicts a conservative dose-response relationship for the combined field data. The curve represents the upper limit of the observed field data, and should be interpreted as predicting the “maximum percent of the exposed population expected to be behaviorally awakened,” or the “maximum percent awakened” for a given residential population.



Source: FICAN, 1997.

E.4 Hearing Loss

Federal Occupational Safety and Health Administration (OSHA) guidelines (Title 29 CFR 1910.95) specify maximum noise levels to which workers may be exposed on a regular basis without hearing protection. Pertinent limits are A-weighted noise levels of 85 dB for up to 8

hours and 115 dB for up to 15 minutes per day. Exceeding these levels on a daily basis over a working career is likely to lead to hearing impairment. These levels are conservative for evaluating potential adverse effects from occasional noise events.

E.5 Health

Nonauditory effects of long-term noise exposure, where noise may act as a risk factor, have never been found at levels below federal guidelines established to protect against hearing loss. Most studies attempting to clarify such health effects found that noise exposure levels established for hearing protection would also protect against nonauditory health effects (von Gierke, 1990). There are some studies in the literature that claim adverse effects at lower levels, but these results have generally not been reproducible.

Table E-1 is adopted from the 1992 FICON document, *Federal Agency Review of Selected Airport Noise Analysis Issues*. The table is a general summary of the effects of noise on people based on scientific studies to date.

TABLE E-1
Effects of Noise on People (Residential Land Uses Only)

Effects ¹ Day-Night Average Sound Level in Decibels	Hearing Loss	Annoyance ²	Average Community Reaction ⁴	General Community Attitude Towards Area
	Qualitative Description	% of Population Highly Annoyed ³		
75 and above	May begin to occur	37%	Very severe	Noise is likely to be the most important of all adverse aspects of the community environment.
70	Will not be likely	22%	Severe	Noise is one of the most important adverse aspects of the community environment.
65	Will not occur	12%	Significant	Noise is one of the important adverse aspects of the community environment.
60	Will not occur	7%	Moderate to slight	Noise may be considered an adverse aspect of the community environment.
55 and below	Will not occur	3%		Noise considered no more important than various other environmental factors.

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1. All data is drawn from National Academy of Science 1977 report "Guidelines for Preparing Environmental Impact Statements on Noise, Report of Working Group 69 on Evaluation of Environmental Impact of Noise."
 2. A summary measure of the general adverse reaction of people to living in noisy environments that cause speech interference; sleep disturbance; desire for tranquil environment; and the inability to use the telephone, radio or television satisfactorily.
 3. The percentages of people reporting annoyance to lesser extents are higher in each case. An unknown small percentage of people will report being "highly annoyed" even in the quietest surroundings. One reason is the difficulty all people have in integrating annoyance over a very long time. USAF Update with 400 points (Finegold et al. 1992).
 4. Attitudes or other non-acoustic factors can modify this. Noise at low-levels can still be an important problem, particularly when it intrudes into quiet environment.

Source: FICUN, 1980; FICON 1992 (Update)